

U. S. DEPARTMENT OF COMMERCE



FURNITURE

► ITS SELECTION AND USE ◀

NATIONAL COMMITTEE ON WOOD UTILIZATION

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The National Committee on Wood Utilization, organized by Herbert Hoover, as Secretary of Commerce, comprises about 200 members, representing manufacturers, distributors, and consumers of forest products. Its object is to work for closer utilization of our country's timber resources. The committee, whose headquarters are in the Department of Commerce, Washington, D. C., works in close cooperation with a number of official and private organizations, notably the Bureau of Standards of the Department of Commerce and the Forest Products Laboratory of the Forest Service, Department of Agriculture.

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Report of the
Subcommittee on Furniture: Its Selection and Use
of the
NATIONAL COMMITTEE ON WOOD UTILIZATION

(Eighteenth report of committee's series)



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FOREWORD

One and a half billion board feet of lumber goes into the American home each year as furniture. The careful selection of furniture on the part of the consumer with due regard to its construction and design, will bring about improved manufacturing practices and a closer and more intelligent utilization of wood. For this reason, the National Committee on Wood Utilization is appealing to the American public to cooperate in bringing about good wood using practices in this field.

This bulletin is issued under the direction of a subcommittee composed of committee members, supported by an advisory committee of specialists interested in the development of various phases of American home life. Since the early stages of the committee's activities, B. S. Warren, of Grand Rapids, Mich., has taken a keen interest in the project and has materially contributed to its consummation.

The committee gratefully acknowledges the valued assistance rendered by numerous individuals and organizations in the compilation of this bulletin. It is especially indebted to the following:

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The cover design was executed through the courtesy of Eldred Mowery, A. I. A. This bulletin has been prepared by Clark B. Kelsey, furniture specialist, of the committee staff.

AXEL H. OXHOLM, *Director.*

FEBRUARY, 1931.

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THE FAMILY is the unit of American life and the home is the sanctuary of moral inspiration and of American spirit. The true conception of America is not a country of 122,000,000 people but a nation of 23,000,000 families living in 23,000,000 homes.—HERBERT HOOVER.



FIGURE 1.—Simple charming arrangements depend upon the thought put into them, not on the amount of money expended. A related group such as this would add to the distinction of a hall or the side of any room, provided other appointments express the same relative qualities of color, line, scale, and proportion. (See ch. 12)

FURNITURE

ITS SELECTION AND USE

By CLARK B. KELSEY, *Furniture Specialist, National Committee on Wood Utilization*

PART I

Chapter 1.—A BUYING PLAN

I SOLD the furniture!" exclaims the salesman to his chief.
"I ordered the furniture!" exults the home maker to her mate that evening. "I think we have just the things we need now to make a comfortable, beautiful, useful, and livable home."

Two points of view, both natural and both understandable.

To the salesman it is a sale, and perhaps a commission. It may also yield a feeling of satisfaction in honest service rendered in making another home beautiful, an asset to those who live in it.

But to the woman it is an investment for the home, for the place where she will spend most of her time. Into that investment may go years of savings or a mortgage of future income through installment payments.

About \$2,000,000,000 are expended annually in this country for furniture. Under present conditions, most of this must be bought blindly. It is a recognized fact that the layman can not become an expert on the multitude of commodities he has to buy. Competition in the present retail market has caused price to be emphasized. Consequently, when buying furniture, the American public has been thinking in terms of dollars and cents rather than of durability and beauty of design. The very nature of furniture requires that the principal construction features be hidden. Conditions, therefore, have not been such as to give even the most cautious consumer all the information he needs for really intelligent buying.

There are hundreds of interesting and vital facts concerning furniture which consumers may learn, just as they have learned about vitamins and calories in food. If these facts become generally known, the result will be greater discrimination and economy in buying and more charming, suitable, and comfortable furnishings in the home.

The home expresses the personalities of its occupants and reveals far more about them than many realize. It stamps them as possessing taste or lacking it. Thinking men and women want backgrounds that interpret them to their friends, and they prefer that the

interpretation be worthy. They also want them correct for their own personal satisfaction.

The factors in the composition of a buying plan include suitability, appropriateness of color scheme, and relationship of the furniture to the architectural background; decision as to whether furniture is to be chosen for a lifetime or for temporary needs; the amount of money available which will determine the field of choice; the available market—that is, the selection of a distributing agency which will best meet the consumer's requirements; and finally, the emotional values which the home maker wishes to express in order to reflect the personality of her family and herself. The importance of thinking out a buying plan can not be overemphasized.

Suitability.

Becoming colors, for example, are as important in home furnishings as they are in clothing. Some persons are essentially Latin in their make-up, and the debonair vivacity in their characters should be mirrored in a gay color scheme for their homes. Others, more sedate perhaps, should choose more subdued colors for their interior furnishings. This illustrates one application of the factor of suitability.

In furnishing a home it is necessary to know in advance the space to be filled and the amount of money which may be employed for the purpose. If it is possible to furnish all the rooms adequately with the funds allotted, an ideal situation exists. But too often reality is short of perfection, and so it might be well to caution against spreading the available amount too thinly over a large number of rooms. A better plan is to select a few pieces of furniture which will be permanent assets and which may be augmented in time to provide a fully equipped home.

The successful room depends not only upon the presence of attractive furnishings but upon the absence of undesirable appointments. If serious mistakes are avoided during the preliminary stages of house furnishing, the ultimate result is fairly certain to be fortunate.

Deliberation will eliminate unwise buying and will show the wisdom of the proper division of home furnishing funds. There are two extremes to be avoided: Disproportionate expenditure for one or two pieces at the expense of the others, and the purchase of furniture at retail prices which preclude the possibility of good material and construction.

How wise it is to choose each piece carefully, adding gradually to the whole, rather than creating a series of compromises between good and mediocre or inferior furniture! Skimping on one piece in order to secure an elaborate companion piece may produce such an unfavorable contrast that the sacrifice to obtain the more expensive furniture will have been made in vain.

Do not construe this as an argument for costly furniture irrespective of circumstances. In the chapter on utility, it is pointed out that investment in temporary furnishings may be advisable in the home where growing children are likely to mar or destroy expensive pieces. In such a home, woods which will stand abuse and upholstery coverings of a material such as denim would be most suitable.

Good design and durability are not necessarily dependent upon cost, for some of the best wearing materials are available in such volume as to sell at very reasonable prices; some of the most delicate and fragile materials, conversely, are likely to be most costly. With this in mind, the prospective purchaser may be prepared to consider the specific problem, remembering that one receives the values for which he is willing to pay.

Since women choose most of the furniture going into the home, reference hereafter will be limited largely to feminine purchasers. Men are consulted on many occasions as to taste, and particularly as to financial limitations.

Before making up her budget, the intelligent home maker will approach her task as she would a lesson in school. In college or high school, she would take notes on lectures in history, chemistry, or physics. She may do the same thing in planning her home, although the entire idea and theory may be new to her.

By visiting the homes of her friends, she will note the individual pieces, their design, wood, color, and general effect. By reading magazine articles and books on the subject, she may acquire a fund of knowledge that will enable her to be discriminating in her choices. In many cities, museums contain interesting exhibits of historic furniture well worth several visits.

When she is ready for her field trip, she may visit the displays and model rooms in furniture stores, department stores, and model homes, noting the things which interest her. Such trips are often a never ending delight to the shopper who has a genuine interest in her problem.

One of the most important single considerations in the furnishing of a room is a definite knowledge of its dimensions. Wall spaces and principal pieces of furniture already in the room should also be measured. Since furniture should fit the space it is to fill as accurately as clothing should fit the body of the person who is to wear it, it is inadvisable to purchase furniture without considerable forethought about the likelihood of disappointment if the actual space relationships of the room are ignored.

Accordingly, the person who wishes to furnish the home intelligently should measure the room and the furnishings accurately. If she is not equipped to do this, a call upon any progressive furniture merchant should bring a man who can perform this service in advance of the purchaser's visit to the store. This would eliminate vagueness of ideas and would actually be to the advantage of the dealer, because the selling process would not be slowed down, there would be fewer returns for exchange or credit, and the salesman would be in a much better position to display appropriate and related furnishings.

The correct solution of home furnishing problems demands knowledge, good taste, and resourcefulness. Since most structural detail is hidden from view, the integrity of the dealer is more than merely an advantage—it is a necessity. Enlist the aid of the most intelligent and responsible merchant in your community. If such a dealer can not meet the home maker's requirements within the stock he carries, he can obtain the desired merchandise without undue delay.

After this preliminary study of her problem, the wise home maker next proceeds to plan her home "on paper." A floor plan of the rooms to be furnished is drawn to scale, and on it are placed small cardboard or flat paper models of the pieces to be used. This will give a miniature idea of how the room will appear when completed. Moving the model pieces here and there will give a good idea of the best combinations and groupings. This may save considerable pushing and tugging about at a later date when the furniture is delivered.

Chapter 2.—AN ELASTIC BUDGET

BY CORRECTLY apportioning the available money, by choosing slowly and carefully each piece that goes into the home, and by securing good value for every cent expended, a well-furnished home is possible, even on a limited budget. Between 65 and 75 per cent of the furniture purchased in the United States to-day is bought on the deferred-payment plan. Wisely used, installment credit increases prosperity and constitutes a real service to consumers. Unwisely used, it may induce the consumer to buy in excess of income and without due consideration of values.

No two homes have identical problems. The architectural features of the rooms to be furnished, the number and size of the rooms, the number of persons in the family, the habits, the personal tastes, and the personal requirements of household members—all are important factors which should be considered when allotting a portion of the family income to the purchase of home furnishings.

Leaving the kitchen aside, most of the waking hours are spent in the living room; the dining room and bedrooms are next in importance in most homes. Students of home furnishing have made a proportionate division of available funds for each room in the house. Owing to the fact that in many houses and apartments kitchen equipment such as stove, refrigerator, cabinet, etc., is furnished, and in other homes certain equipment is built in; owing also to the fact that in one home the domesticity of the home maker may require the finest of equipment, whereas in another home the can opener is the chief utensil required, it is difficult to suggest a proportionate allotment of the budget for the kitchen.¹

The following table shows budgets for furnishing homes of from two to seven rooms (exclusive of the kitchen or kitchenette). Although based on average expenditures in three widely separated localities—Madison, Wis., Atlanta, Ga., and Santa Barbara, Calif.—the percentages were made to conform to the limits generally accepted as most suitable. It is not the purpose of this booklet to set up arbitrary standards in budgeting, but to erect sign posts which will guide the home maker on the pathway to an attractively furnished home. The limitations of the various allotments are elastic, but considerable deviation from usual practice should cause the consumer to consider whether or not certain portions of the home may be receiving too much emphasis at the expense of other parts.

¹ In demonstration houses furnished by local Better Homes in America committees, 15 per cent of the amount provided for the furnishing of an entire home is devoted to kitchen furniture and utensils.

Proportional room percentages¹

Room	2-room home	3-room home	4-room home	5-room home	6-room home	7-room home
Living room.....	67	45	40	32	30	28
Master bedroom.....	33	25	20	21	17	16
Dining room.....		22	20	19	17	16
Hall ²		8	6	6	6	5
Guest room.....				14	11	10
Child's room.....					10	9
Additional bedroom.....						8
Sun porch or nursery.....				8	9	8
Total.....	100	100	100	100	100	100

¹ Based on the cost of furniture and furnishings in demonstration houses arranged by local Better Homes in America committees, together with budgets prepared by home economics classes in colleges and universities.

² The hall is not considered as a room, but provision is made for its furnishings.

In the purchase of worthwhile furniture it is wise to figure on spending considerable money, for "good goods pay in the end," however large the cost may appear at the beginning. The costs of handling low-grade furniture are fully as high (and even higher in proportion) as the costs of handling better furniture. This is one reason why low-grade furniture sometimes gives the least value per dollar of cost. If buying on the installment plan, sufficient money should be available for a down payment, and there should be definite assurance that money to pay the balance will be forthcoming.

Better Homes in America, an educational organization, makes a general recommendation that 25 per cent of the cost of the house be invested in home furnishings. It would be just as absurd to spend \$30,000 on a house and \$1,000 on its furnishings as it would be to spend \$30,000 on the furnishings and \$1,000 on the house itself. Unquestionably the person who is capable of achieving wonders with a small amount of money will improve the result to a marked degree when additional funds are provided.

In furnishing a room, individual tastes must be considered. Musical instruments, for instance, are necessary to some persons and extraneous to others. Silverware, dishes, and linen will vary in their importance; and so they, too, are left out of the consideration, as are laundry and cleaning equipment, and bathroom accessories.

Home-furnishing budgets

Room	Budget of \$450	Budget of \$1,000	Budget of \$1,800	Budget of \$3,000	Budget of \$5,000 ¹
Living room.....	\$180	\$400	\$720	\$1,200	\$2,000
Master bedroom.....	90	200	360	600	1,000
Dining room.....	90	200	360	600	1,000
Child's or guest room.....	63	140	252	420	500
Hall or sun porch.....	27	60	108	180	500

¹ It is likely that there are additional rooms in a home where the larger budgets are provided. Naturally, the money available should be divided among all the rooms. These tables are not intended to prescribe rigid limits, but to suggest well-considered plans which may be adapted to individual needs.

Living-room budgets

	Budget of \$180	Budget of \$400	Budget of \$720	Budget of \$1,200	Budget of \$2,000
Furniture (65 to 70 per cent):					
Two upholstered pieces (sofa, day bed, settee or davenport, and easy-chair).....	\$75. 00	\$150. 00	\$185. 00	\$300. 00	\$500
Table.....	10. 00	20. 00	30. 00	60. 00	100
End table.....	5. 00	7. 50	18. 00	30. 00	50
Small easy-chair.....	15. 00	25. 00	50. 00	65. 00	100
Occasional chair.....	4. 50	7. 50	32. 00	35. 00	45
Mirror.....			20. 00	37. 50	50
Floor lamp and shade.....	7. 50	15. 00	25. 00	40. 00	75
Table lamp and shade.....		10. 00	20. 00	37. 50	40
Desk or secretary.....		27. 50	50. 00	125. 00	150
Desk chair.....		7. 50	10. 00	30. 00	35
Additional chair.....				20. 00	30
Hanging bookshelf.....			17. 00		
Magazine rack.....			5. 00		
Bookcase.....				25. 00	75
Additional pieces ¹					150
Total for furniture.....	117. 00	270. 00	462. 00	795. 00	1, 400
Floor covering.....	36. 00	75. 00	150. 00	225. 00	310
Draperies.....	14. 40	32. 00	57. 60	96. 00	150
Accessories (pictures, flower bowls, ash trays, etc.)....	12. 60	23. 00	50. 40	84. 00	140
Total.....	180. 00	400. 00	720. 00	1, 200. 00	2, 000

¹ Additional pieces might include love seat or settee, additional chairs, ottoman, console table, occasional tables, mirror, additional lamps, fernery, aquarium, screen, flower stand.

It is highly desirable that some musical instrument—piano, radio, or phonograph—be included in the living room. Choice of such equipment will depend upon the individuals whose requirements are to be satisfied. An especially fine musician would demand an especially fine instrument; if no member of the family plays the piano,



FIGURE 2.—Guest room furnishings costing \$250 in a 5-room home equipped at a total cost of \$1,800. (Mattie Edwards Hewitt photograph)

a radio or a gramophone or a combination of the two might be desirable. Since the tastes will vary to an astonishing degree, provision should be made for musical instruments outside this budget.

Let us furnish a living room in accordance with one of the budgets shown above. We have chosen the budget of \$1,800 for the furnishing of a 4-room house (living room, dining room, two bedrooms, and hall) as the one best adapted to our needs, and it is probably the one most applicable to the typical family. This allows \$720 for living room furnishings. We must, of course, consider our own problems and tastes; therefore, we shall use the table as a guide, but shall deviate when the individual need would seem to make a change desirable.



FIGURE 3.—Provision should be made for children's furniture

We, for the purpose of this discussion, are Mary and John, and Baby Junior. Our living room is 11 by 15 feet; it contains a doorway from the entrance hall or vestibule and a doorway leading to the dining room; there are two windows on the same side of one long wall as the outside entrance; there is one window on one of the short walls. Our family is not musical; consequently, there is no piano, but we already have a radio which was a wedding gift.

The balance or equalization of emphasis must always be a primary consideration. The sofa or davenport will be one center of interest in the room. Mary realizes that the sofa will remain permanently in the living room; other pieces may be moved upstairs when money becomes available for better pieces

for the living room. So we choose a davenport and a harmonizing chair for \$185. We need another easy-chair which may be obtained (within our budget) for \$50. Seating 3 persons on the davenport and 2 on the chairs, we have accommodation for 5 people; 6 is probably the maximum number of guests we shall have simultaneously for some time to come. We choose a third chair for \$32 and a desk chair for \$10. When we have brought in a chair from the dining room, 8 persons can be comfortably seated.

As soon as Junior nears the age of two, we shall be sure to provide a chair for him. A low table and shelves for his picture books will give him an early interest in his home. Children should be made to feel that they are a real part of the family.

Another key piece in the living room will be the desk. We allow \$50 for this. Of course, if Mary's heart is set on a fine secretary of eighteenth century American type, we shall have to economize elsewhere and pay more for a well-made desk of this type. In this case Mary will be content to bring in another chair from the dining

room when the need therefor arises, instead of having two occasional chairs; or, she may be satisfied with a less costly floor covering.

With \$30 to spend for a reading table we search for a gate-leg or a tilt-top pedestal table. For \$18 we secure an end table or a coffee table. A mirror makes any room look larger, so we find one which looks well with the furniture we have chosen, and it costs \$20. We find a floor lamp (base and shade) for \$25, and a table lamp costs

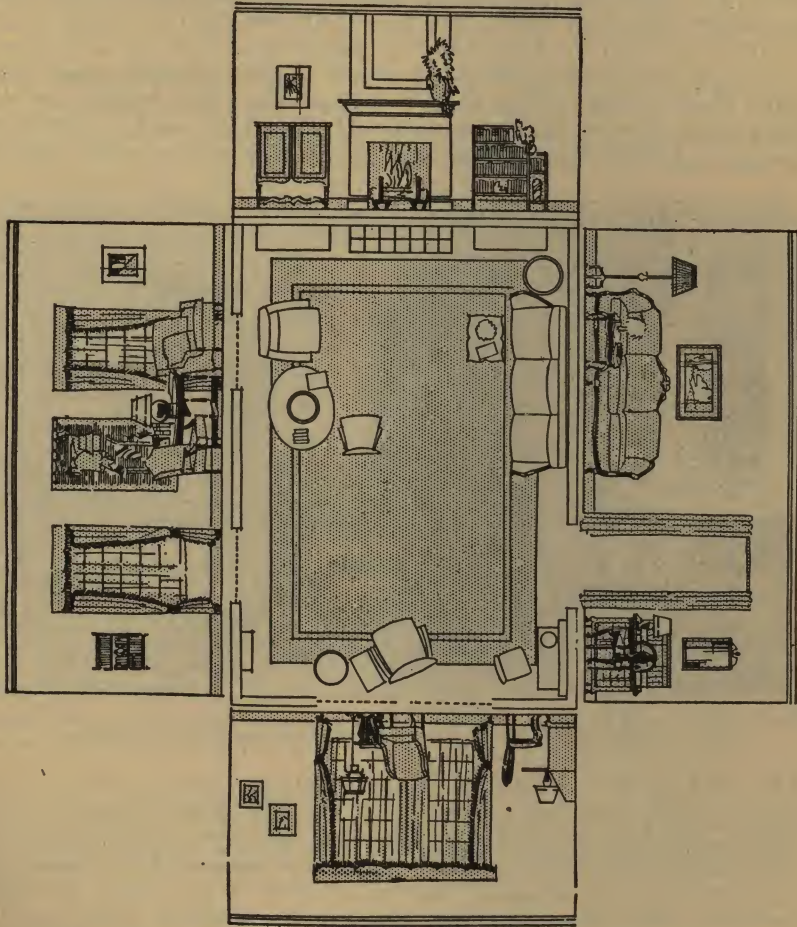


FIGURE 4.—This is the room which Mary and John arranged after figuring out their budget and proportioning it according to the schedule described on pages 6 and 7. The total cost of the furniture, floor coverings, draperies, and accessories was \$720. The radio is not included in this budget.

\$20. A bookcase or a hanging bookshelf for \$17 and a magazine rack for \$5 bring our cost for furniture to \$462. This is \$6 less than the 65 per cent allotted for furniture. If we had found a sofa or a desk which just seemed indispensable, we might have eliminated one or two of the other items for the time being.

The wisest way to economize on furniture expenditure is to do without unessential pieces, at least temporarily. They may be added

at a later date. In this way, by choosing fairly good furniture and filling in when possible, we are not guilty of false economy.

Twenty per cent of our \$720 is apportioned to floor coverings. After consideration we decide to add the \$6 remaining in our furniture appropriation to our budget for rugs or carpet, for which we now may spend \$150. We have the choice of the sheen-type rugs in Oriental pattern or broad-loom carpet; we may choose an Axminster or a Wilton rug; perhaps a machine-hooked rug may serve our need better than any other, and if we suit our floor covering to our furniture, we shall be happy in this selection.

It might have been possible to secure a very attractive and serviceable floor covering for 10 per cent of the total budget for the living room, instead of 20 per cent. If, therefore, we had preferred a wing or barrel chair, if we had decided to get a better reading



FIGURE 5.—Dining room furnished for \$360 in a 5-room home where the total home furnishing investment was \$1,800. (Mattie Edwards Hewitt photograph)

table, or if we had decided to put more money into our sofa or our desk, we could have done so by using the \$70 or \$75 floor covering. Decisions of this sort build the room into what we want it to be.

For curtains \$57.60 is available.² The exposure of the room, the architecture of the windows, the dimensions of the room, the color scheme of walls, floor covering, and furniture—these determine the style and color of the draperies. We may choose a gay chintz or cretonne, a velvet, silk, brocade, or damask. We allow about \$40 for the overdraperies and the remaining \$17.60 for glass curtains of net, dotted swiss, batiste, casement cloth, voile, marquissette, or scrim.

Seven per cent of our budget (\$50.40) remains for decorative accessories, including pictures or prints, waste paper basket, book

² See Department of Agriculture Farmers' Bulletin No. 1633, Window Curtaining, by Bess M. Viemont, available at the office of Superintendent of Documents, Government Printing Office, Washington, D. C., price 10 cents.

ends, flower bowls, cigarette boxes, ash trays, and so on. Naturally, more gifts—wedding, Christmas, and anniversary—will come into this classification than in any other.

Frequently, there is a piece of furniture or an architectural detail in a room about which a setting may be built—a sofa, a desk, a clock, or a fireplace. Clocks, in addition to being useful, are unusually successful in giving a decorative touch to awkward corners or bare places on mantelpieces and bookcases. There is a wide field for choice, from the stately grandfather clock to the small timepiece suitable for use in many places.

The figures in this budget were elastic enough so that what seemed most important to us came within our means. At the same time, the limits caused us to think twice before spending every available cent upon our particular hobbies without taking into consideration the proportionate value of other items.

"It was both enjoyable and enlightening," Mary said, after the last new accessory was in place. "Of one thing I am well convinced; in buying furniture I am always going to select a piece which is a little better than I expected to buy—one that requires a little sacrifice—and I know I'll appreciate it far more than the things that were easy to acquire."

Having followed us through our living room selections, the reader may enjoy working out solutions for the other rooms in the home, adhering to the budget only so far as it is adapted to personal needs.

Dining-room budgets

	Budget of \$90	Budget of \$200	Budget of \$360	Budget of \$600	Budget of \$1,000
Furniture (65 to 70 per cent): Dining room suite, breakfast set, etc., from 5-piece set (table and 4 chairs) to 12-piece suite (table, 8 chairs, serving table or tea wagon, side board, china cabinet or equivalent) ¹	\$58.50	\$130	\$234.00	\$390	\$650
Floor covering.....	18.00	40	72.00	120	200
Draperies.....	7.20	16	28.80	48	80
Accessories (pictures, bowls, candlesticks, etc.).....	6.30	14	25.20	42	70
Total.....	90.00	200	360.00	600	1,000

¹ In the dining room, a lowboy might be preferred to a buffet, a corner cupboard to a china closet, or a highboy to a sideboard. In a 1-room or a 2-room apartment, a breakfast set is used frequently in the living room; double-purpose furniture is available for such arrangements. In addition to the pieces named above, a fernery, plant stand, aquarium, screen, torcheres, and a candle-type lamp, would be appropriate in some dining rooms.

Bedroom budgets

	Budget of \$90	Budget of \$200	Budget of \$360	Budget of \$600	Budget of \$1,000
Furniture (65 to 70 per cent):					
Bedroom suite, 3 or 4 pieces, (bed, vanity, and chest or dresser, or both) ¹	² \$37.50	³ \$87.50	⁴ \$150.00	⁵ \$250.00	⁶ \$360
Bed spring	8.50	10.00	17.50	40.00	45
Mattress	12.50	20.00	25.00	40.00	45
Chair	5.00	12.50	17.50	27.50	75
Additional chair or a desk		5.00	10.00	12.50	46
Bedside table			8.00	15.00	22
Boudoir lamp			6.00	10.00	17
Additional pieces ⁷					100
Total for furniture	63.50	135.00	234.00	395.00	710
Floor covering	15.20	35.00	72.00	115.00	175
Draperies	6.00	16.00	28.80	48.00	65
Accessories	5.30	14.00	25.20	42.00	50
Total	90.00	200.00	360.00	600.00	1,000
Total with twin beds		250.00	435.00	725.00	1,175

¹ Some suites include chair, vanity bench, and bedside table.

² With so small a budget, twin beds with accompanying mattresses and springs might not be possible. In general, twin beds are preferable from the viewpoint of health and comfort.

³ For twin beds, add \$50 for extra bed, mattress, and spring.

⁴ For twin beds, add \$75 for extra bed, mattress, and spring.

⁵ For twin beds, add \$125 for extra bed, mattress, and spring.

⁶ For twin beds, add \$175 for extra bed, mattress, and spring.

⁷ In addition to those named above, the following pieces would add to the usefulness, beauty, and comfort of some bedrooms: Cedar chest, mirrors, sewing table, chaise longue, and extra tables, lamps, and chairs.

Chapter 3.—UTILITY

FURNITURE must have practical utility. It may possess every decorative asset for which the home maker has longed, but unless it serves a useful purpose it does not belong in the usual home. A sideboard, for instance, must hold the table silver and linens, and without the capacity for this, it lacks justification. The well-furnished home is not a museum.



FIGURE 6.—Well-chosen small pieces for the apartment may be made to fit into larger homes. The dinette table shown is well suited for use as a reading table when conditions make advisable the acquisition of larger living quarters

Size must also be considered. If each piece of furniture appears to fit into the complete picture formed by the room, as though it were built to its measure as is the fixed background—walls, floors, ceiling, fireplace, doors, windows, and other architectural details—a correctly proportioned or scaled room is inevitable.

Standardized sizes have been produced to meet the typical modern house need. In the olden days, before any but the nobility had much decorative furniture, and the landed gentry lived in large mansions, the scale was much greater than it is to-day. An interesting modern development is the production of period furniture adapted to the small room. The line and form used by the master designers have been followed meticulously, but the scale or proportions have been reduced to conform to smaller, more intimate, twentieth century backgrounds.

Well chosen "first" pieces of furniture may be used when a family which has prospered moves from a smaller home to a larger one. This is particularly true of chairs but is also true in varying degrees of other pieces. For example, the drop-leaf table with gate legs or pedestal base used in the tiny apartment "dinette" may become a reading table when the full-sized dining room suite is purchased.

Furniture scattered about a room in haphazard, meaningless fashion does not attain its greatest usefulness. Most furniture belongs to a group and each group, in addition to earning its way in use and beauty as a unit, must form a natural, related whole in company with the other groups.

The arrangement of furniture, accordingly, must be accomplished with the best possible compromise between the ultimate in use and beauty. Fortunately, furniture looks misplaced if it is not where it will do the most good.

Purposeful Furniture.

Each group should have a purpose and the pieces of one ensemble should flow into and intermingle with the next grouping. In a reading group, for example, pieces of the same type as are used in a conversational group—chairs, tables, lamps—may be found. These should be carefully related in design and also in placement. Care always should be taken to insure the proper conditions for scanning the printed page and also for comfortable chatting.

A writing group—desk, chair, and lamp—to be truly useful should be near a window for adequate daylight. The vanity group in the bedroom, or any place in the house where a mirror is used, should also be given plenty of light.

Table and floor lamps are accepted as a most practical and adaptable type of lighting for the home. Convenience determines their placement in reading, writing, or conversation groups.

Tables are useful complements for adjoining pieces of furniture, not only for holding lamps, flower bowls, books, magazines, smoking equipment, and accessories, but in offering handy spots for the man or woman, when seated, to drop reading matter, sewing, and other odds and ends.

The degree of usefulness of any piece of furniture is dependent upon the individual demands and needs of its users. A bachelor's apartment will have certain requirements which will differ radically from the home in which there are four children, all daughters.

Where many persons must study, of necessity there will be more desks than in the home where little writing is done. This means more desk lamps and more places for books. When school days

have ended, too many desks will be superfluous in a home of limited space, and disposition will have to be made of the unnecessary furniture. Useless pieces are far better placed in the storeroom than in crowded quarters where they impede efficient execution of household tasks and obstruct the "traffic lanes" that are so essential in any well-arranged home.

Upholstered furniture in particular should be chosen with utility in mind. If the framework is of wood which will withstand wear and tear, and the textile covering will not show dirt, or absorb moisture, or (if it happens to be a pile fabric) mat down, it will meet the demands of a home where children scurry about. On the other hand, the needs of an adult family may be equally well served by a framework of fine-textured wood and a light, delicate fabric cover-



FIGURE 7.—This sort of corner arrangement would be most useful in any home. It is handy for reading, writing, and conversation. Thought has been given to proper lighting. (Mattie Edwards Hewitt photograph)

ing, because that family will not subject the furniture to rough treatment.

In an informal living room, where the atmosphere is one of unrestraint, it is likely that various members of the family will want to stretch out at full length upon the davenport or sofa. For such a family, a small settee or love seat would be unsatisfactory. The upholstery covering for a davenport in this type of home should be of a material which will not soil easily. In the home where it is not possible to provide a guest room, a davenport bed or a day bed may be the best solution for accommodating the overnight visitor.

Consider Individual Needs.

The mode of living and the occupation of wage earners of the family have an important bearing on the utility and consequent

economy in the choice of furniture. For example, those who for business reasons are constantly on the move, may find it advisable to choose inexpensive furniture to be disposed of rather than to pay costly moving bills at frequent intervals. Other families composed of persons who tire of their belongings very easily will think it best to reinvest in home furnishings periodically, choosing cheaper pieces than they would if the furniture were expected to last a lifetime. To those of a contrary opinion, it may be pointed out that furniture which costs \$30 and which will last twice as long as furniture costing \$20, is the more economical and sensible investment.

It would be well to remember that large-scale, boldly drawn, and sharply colored patterns in coverings, in rugs, and in draperies are far more likely to become tiresome than those of the opposite character. Likewise, ornamentation should bring out the beauty of furniture, appearing to belong to it for decorative or structural reasons rather than to give the impression of being an unnecessary afterthought.

When utility is the prime consideration, it may be well to choose furniture from the so-called "open-stock" designs. If there is assurance that the pieces always will be available at a store, and that there will be a wide variety of choices, it will be possible to accumulate just the equipment desired, postponing nonessentials.

A definite schedule of needed equipment will be most helpful. With a list of the required pieces, it will be easier to see that the proper thing to do is to buy the chair or the table which will fill a definite need even if there is an ever so tempting bargain in some other article advertised by a store.

Chapter 4.—COMFORT

IN ADAPTING furniture to a variety of human shapes and forms and to any number of postures, comfort must be the prime consideration. There is no test like actual use; therefore, the "sitting" test should be applied to all chairs or divans to see if they serve their purpose without effort or adjustment.

The oriental idea of comfort is low-slung chairs and divans. To some extent the creators of "moderne" furniture have favored the low-squat seat. Although some of these are comfortable, older persons have difficulty in lowering themselves into such chairs, and when settled, find them difficult places from which to arise.

Sizes have been standardized in furniture as they have in hats, shoes, collars, and clothing, and it is only the furniture which radically departs from the standards for comfort which should be avoided.

Tests for Comfort.

Whether a person be shorter or taller, furniture constructed to meet the requirements of a man or woman who is 5 feet 8 inches tall will be found comfortable by a majority of people. Pieces are available for those who are abnormal in height. One of the individual requirements to be considered is the bed for the man who is 6 feet or more in height; he should be sure to choose one which will accommodate him.

A dining-room chair, which with a few variations contains the same measurements as the boudoir, kitchen, porch, and occasional chair, will be comfortable if the seat is as high as the human leg from the knee to the floor. If it is higher than this, the person must sit too far forward in the chair or allow the legs to dangle. (See fig. 8.) If the height from the floor is much less than the measurement of the leg from heel to knee, the thighs will not be supported properly. Eighteen inches has been accepted as the standard height for the seat of a chair. Deviation from this measure in either direction will not discommode most people unless the variation is too great.

Depth of chair seats from the front to the rear is another highly important consideration. People frequently squirm in church pews or theater seats which are too shallow and therefore uncomfortable. This is because specifications were given which provide for seating the largest possible number of people without regard to their comfort. Nineteen inches is the seat depth best suited to the average person. Much more than this will necessitate the placing of a cushion to support the small of the back. A cushioned easy-chair can be 24 inches deep without discomfort to the user. A slight downward slant from the front to back—about three-eighths of an inch—adds to the comfort.

At the back of the chair, support and slant are needed to bolster the back at the shoulders. The slant of the back should depend upon

the slant of the seat, but if the back has a "rake" of 4 inches, there will be little tendency to slide. From 17 to 19 inches above the seat, the top slat of the chair will hold the shoulder blades where they need support.

If arms of chairs are approximately 7 inches above the seat, the elbows of most people will be accommodated comfortably. Because of the elbow "hinge" which makes it possible to move the human arm backward or forward, inward or outward, variations of the 7-inch height will not cause discomfort to most persons.

The comfortable chair gives support to the body at all essential parts of the seat and back, and both are placed at a slope which prevents sliding. It should be easy to get in or out of the chair. It does not follow that furniture which is huge in size increases in

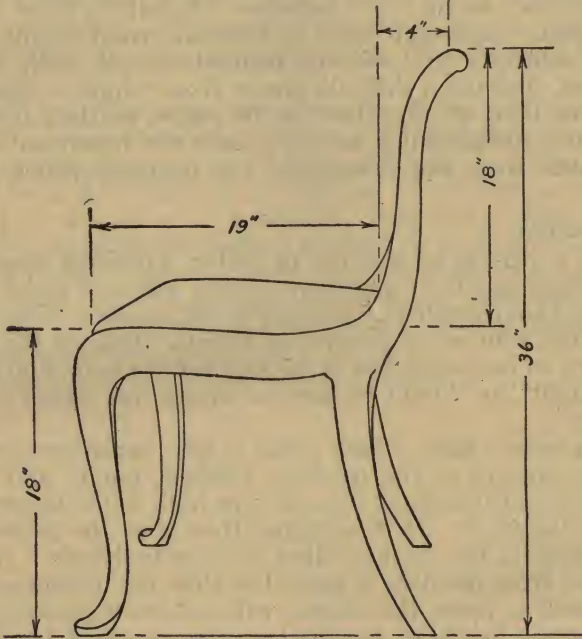


FIGURE 8.—Measurements for comfort to meet the requirements of most persons

comfort with its enlarged proportions. The principles of chair measurements apply as well to all seats, such as divans and sofas. In giving chairs the "sitting" test, it would be well to remove the coat in order to approximate the usual condition of use in the home.

Adjustment to Individual Needs.

There is, perhaps, no item of furniture which should be chosen so particularly by the person who is to use it as the easy-chair. The housewife has difficulty in selecting one which would be really comfortable for her husband, and he in turn is hopelessly puzzled in selecting a chair for his wife.

If the man sits erect, one type of chair would be suitable; if he lounges or slides down in the chair, another would be most useful; but in either case he should test the chair in order to ensure the fact

that it will be comfortable for him. Other chairs may be a compromise but the particular ones which are to be used by husband and wife must fit the individual postures if they are to yield the greatest satisfaction in comfort.

A desk top on which writing is to be done is usually 30 or 31 inches from the floor; one on which a typewriter is placed will be about 24 inches high. An end table will be about as high as the arm of the davenport or chair it adjoins, approximately 25 inches.

It is said that the first furniture was originated by a lazy man to make things easier for himself. His very laziness seems to have produced a paradoxical efficiency, and in taking life easy man has progressed far beyond the animal kingdom.

It is for comfort that furniture should be arranged in groups, each adjoining piece making for greater efficiency. Comfort means usability, and the greater number of uses to which a piece of furniture is adapted, the more important will be its service in the home.

Look for Details.

There are any number of small comforts which are added to furniture thus making it serve double purposes. For instance, an end table may contain a small ash tray which slides in and out; underneath the table there may be a book trough or magazine rack; a table may have a drawer in which odds and ends can be kept.

Little conveniences add much to the serviceability of a piece of furniture. The consumer should be certain, however, that they really will be convenient for personal possessions and adjusted to individual habits. Many sideboards contain plush-lined trays in one drawer, or compartments for silverware; bureaus and chiffoniers often contain partitioned jewelry trays; vanities often have drawers fitted with sliding glass trays for cosmetics.

If the furniture is built too close to the floor—less than 6 inches—it tends to be a dust collector. It is hard to sweep or dust beneath it or to run the vacuum cleaner there. To many ornate carvings give corners and crevices to furniture, thereby making dusting difficult and tedious. A soft bristle brush is the most efficient tool for dusting carved furniture. It makes the task far more simple.

The first of these is the fact that the United States is a young nation, and that its history is a history of growth and development. It is a history of a people who have been able to overcome many difficulties and to build a great nation out of a small colony. The second fact is that the United States is a nation of immigrants, and that its history is a history of the struggle for the rights of these immigrants. The third fact is that the United States is a nation of free men, and that its history is a history of the struggle for the rights of these free men.

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PART II

Chapter 5.—PRINCIPAL WOODS USED IN THE MANUFACTURE OF FURNITURE

WOOD has always been an efficient ally of Americans and their homes. Our forefathers hewed their homes and their furniture from the timber they found in the wilderness to which they came. It was native American wood, and love for it is inherent in our people.

But the use of wood for furniture is not confined to this continent. Down through the centuries it has been universally used for this purpose, because wood grows in nearly every inhabited region of the world. Not only is it readily available; but it has numerous advantages which recommend it as a furniture material, among them the natural beauty of its grain and the ease with which it may be worked and carved. Wood is neither hot nor cold to the touch and, being a poor conductor of heat, does not absorb or radiate the cold of winter or the heat of summer. Furniture made of wood is also comparatively noiseless under impact.

To-day approximately 92 per cent of all household furniture is of wood. Metal and composition materials in late years, however, have made considerable progress in this field.

Wood Growth and Structure.

Trees grow in diameter by the addition each year of a new layer of wood immediately under the bark, producing in most woods a well-defined outline called an annual ring. The annual rings form much of what we usually call grain or figure which is visible even in rough lumber.

Wood, like all plant material, is made up of cells. Wood cells are of various types and sizes in each species, and in no two species is there found an identical arrangement of these various elements. One type of cell adds strength; other types transport water and sap longitudinally; still others provide for horizontal movement of tree foods. The "flakes" in quartered oak and sycamore result from the occurrence of unusually large cell groups running radially in the tree. All kinds of wood contain this type of cellular structure, but in most species it is inconspicuous. The small grooves visible on finished surfaces of walnut, oak, mahogany, and chestnut are caused by the large, sap-transporting combinations of cells. In many species they are invisible without magnification.

Accurate identification¹ of more than 100 different species of our commercial woods requires years of training and experience. For exact identification of certain species, the use of a microscope is necessary. The identification of all species of wood after manufacture into furniture is, for the ordinary consumer, practically impossible. In the majority of cases he must depend upon the reliability of the manufacturer and the distributor. A study of the principal

¹ See U. S. Department of Agriculture Miscellaneous Circular No. 66, Identification of Furniture Woods, for a complete discussion of the subject.

characteristics of the important furniture species, however, will enable the layman to recognize many of the leading varieties.

The woods used in the manufacture of furniture are divided into two groups; namely, hardwoods and softwoods. These terms are



FIGURE 9.—Wood, the raw material at its source. (Photo courtesy of Forest Service, United States Department of Agriculture)

often misleading in that they apply only in a general way to the hardness or softness of the species included in each group. Some of the hardwoods are softer than certain of the softwoods. For example, yellow poplar and basswood (both hardwoods) are softer

than Southern yellow pine (a softwood). In the use and interpretation of these terms, the fact should be kept in mind that the distinction is based on botanical characteristics rather than physical properties of the woods.

For all practical purposes, the hardwood and softwood trees growing in the United States may be classified according to their type of leaves. All trees having broad, flat leaves such as oak, gum, walnut, and maple are hardwoods, and all trees having needle-like leaves such as the pines and spruces, or scale-like leaves such as the cedars are softwoods. Most of our hardwoods shed their leaves in the fall (the notable exception is Southern live oak), whereas most of the softwoods, with the exception of larch and cypress, retain their leaves through the fall and winter.

The structure of the hardwoods is more complicated than that of the softwoods. The hardwoods have thicker-walled cells, which occur in a greater variety of sizes and shapes than do those in the softwoods. This characteristic gives to most of the hardwoods a beauty of grain and figure which is superior to that exhibited by the softwoods. Superior beauty and susceptibility to a better polish, together with greater hardness and better wearing properties, make the hardwood group more valuable than the softwoods for furniture manufacture.

The following table shows, in millions of board feet, the quantity of lumber and veneer used in the manufacture of furniture in this country during the year 1928. This table includes the quantities used in the construction of all types of household furniture and chairs, and also the wood used in the manufacture of such items as kitchen cabinets, refrigerators, mirror and picture frames, and clocks. It will be noted that more than 88 per cent of the woods used by the furniture industry are native hardwoods, whereas about 8 per cent are native softwoods, and only 3 per cent are imported hardwoods.

*Quantity of lumber and veneer used for furniture manufacture in the United States, 1928, in millions of board feet*¹

American hardwoods	Quantity	Imported hardwoods	Quantity	American softwoods	Quantity
Red and sap gum.....	449.8	True mahogany.....	40.0	Spruce.....	35.1
Oak.....	169.0	Philippine hardwoods		Douglas fir.....	22.6
Yellow poplar.....	151.7	(tanguile, red lauan,		Southern yellow pine.....	22.6
Birch.....	114.2	etc.).....	6.0	Western red cedar.....	14.9
Maple.....	98.2	Khaya (African mahog-		Pondosa and California	
Chestnut.....	78.8	any).....	1.3	white pine.....	11.4
Tupelo.....	60.4	Circassian walnut.....	.2	Hemlock.....	7.5
Walnut.....	51.5	Spanish cedars.....	.1	White pine.....	6.8
Beech.....	39.0	All others ²6	Cypress.....	3.7
Elm.....	33.8			Other western cedars.....	2.5
Ash.....	33.7			All others.....	2.1
Basswood.....	25.2				
Alder.....	17.8				
Sycamore.....	15.2				
Cottonwood.....	10.0				
Hickories.....	3.0				
Hackberry.....	2.0				
Cherry.....	1.7				
All others.....	1.6				
Total.....	1,356.6	Total.....	48.2	Total.....	129.2
Per cent of total consump-		Per cent of total consump-		Per cent of total consump-	
tion.....	88.5	tion.....	3.1	tion.....	8.4

NOTE.—Quantities shown are accurate to the nearest 100,000 board feet.

¹ Compiled from statistics shown in Lumber Used in Manufacture, 1928, by the Forest Service, U. S. Department of Agriculture in cooperation with the Bureau of Census, U. S. Department of Commerce.

² Includes balsa, European beech, West Indian boxwood, ebony, eucalyptus, laurel, Japanese or English oak, padauk, prima-vera, rosewood, satinwood, teak, and a few others.

The above table shows the actual number of board feet used; however, it does not bring out the fact that veneers, discussed in a later chapter, are much used. For example, while 51,500,000 board feet of black walnut were used—as the table reveals—326,400,000 surface feet of veneer were produced from a part of the solid wood included in this total. Many of the more decorative woods are used where their beauty will be most appreciated, while the more substantial ones are employed for those parts in which strength properties are an important consideration.

What is a Good Furniture Wood?

Nature has given wood a wide range of physical characteristics and properties resulting from the innumerable combinations of wood elements. If man could control the structure of wood in such a manner as to produce a species perfectly adaptable to the manufacture of furniture, the troubles—and many of the pleasures—of furniture buying would be at an end. Let us list the physical, decorative, and economic properties of such an imaginary ideal wood. Assuming that a perfect furniture wood were available, it would possess such hardness and strength as to resist normal wear, tear, and abrasion, yet such softness as to be easily worked with ordinary tools and to take nails and screws without splitting; it would season easily without warping or twisting and would stay in place after manufacture without swelling or shrinkage. It would have natural beauty of figure and grain; it would take stains and various finishes in such a manner as to give a pleasing and attractive appearance; and it would be easily repairable. It would be available in such quantities that its cost would not place it beyond the reach of the average consumer.

When you glance at a newspaper advertisement, it is probable that you will see such phrases as these: "Blank wood in maple finish," or "blank wood—finished walnut." The word "finish" applies to the stain and not to the wood. The wording does not imply that the more expensive wood is veneered onto the less costly wood, but is a frank statement that it attempts to match the beauty which is recognized in some woods.

The Furniture Woods.

The home owner or home maker who wishes to know the why of choosing furniture will be interested in learning what nature has given us in the way of desirable and undesirable properties in our furniture woods. A few woods combine most of the desirable properties, and others possess some of these qualities in varying degrees. Some are readily workable; some have the strength requisite for use in structural parts; and some possess the beauty which is desirable for exposed surfaces. The problem is to choose the wood or woods commensurate with cost which best meet the requirements for the service and conditions to which they are to be subjected.

*Walnut.*²—Walnut is almost an ideal wood for furniture because it combines the many qualities which make for beauty, strength, and durability. Its botanical name is *Juglans*. Even very early in history its use is noted. Records show that it was employed

² American Lumber Standards nomenclature, indorsed by U. S. Department of Commerce and accepted by industry, used throughout.

during King Solomon's day. Walnut ornaments have been found in the caves of the Tennessee mound builders. During the Renaissance and down through each succeeding century, walnut has been found desirable for use in furniture.

American black walnut is the wood known as walnut to-day in this country. A half century ago, it was the unfortunate practice to cover its natural beauty by dark stains and dull finishes which obscured the fine grain and figure. Within the past few decades, however, lighter finishes have enhanced the inherent loveliness of the natural wood.

Much of the furniture made to-day is of walnut or of walnut veneers. Stumps or burls, abnormal growths in which the grain is very irregular, are highly figured and used where beauty of pattern is desired. Other patterns come from the crotch of a limb joining the tree trunk, although this pattern is said to be more susceptible to checking than the others.

Walnut combines moderate weight with maximum strength. It seasons well, works well, holds up durably under usage and has beautiful grain and color.

Butternut is a member of the walnut family which is somewhat lighter than American black walnut. Although usually plain, it takes a fine finish and is a beautiful and serviceable wood.

There are a number of woods which have been called walnut and given a descriptive adjective. In some cases the prefix is perfectly proper. In other cases, the inference is misleading, inasmuch as the wood named belongs to a genus other than *Juglans* and is given the honorary title of the preferred wood in order to make it sell.

American walnut or black walnut, white walnut or butternut, Persian walnut, English walnut, French walnut, Italian walnut, Turkish walnut, Russian, Circassian, or Caucasian walnut, Spanish walnut, Japanese walnut, and Bolivian walnut are all members of the genuine walnut or *Juglans* family.

On the other hand, a wood which has been called variously Oriental walnut, Australian walnut, walnut bean or Queensland walnut is a member of the laurel family, and is not a true walnut. Another wood which has been called by some persons African walnut is not a member of the true walnut family.

Circassian walnut grows in the Caucasus where the weather conditions are so rigorous as to gnarl and twist the wood fibers into a beauty of pattern which is greatly admired. It was formerly used to a greater extent than to-day.

Oak.—The hardy oak, for many years a much-used furniture wood, is again in fashion after a period of reaction against the garishness of the golden oak era. From the days of the Italian, Spanish, and French Renaissance we find oak greatly in demand. Much of the new interest in the wood lies in designs which hark back to Tudor-Elizabethan and Jacobean England and to the French provincial styles. In dining room and bedroom, oak pieces massive in form and mellow in finish, are winning favor. Because oak is rugged, it shows less sign of abuse than some of the dainty, delicate, highly burnished woods.

Inasmuch as oak is essentially solid, substantial, and masculine, larger oak pieces can hardly be crowded into a small room without

giving the appearance of being out of scale. Given sufficient space and appropriate accessories, it is well adapted to the average room.

The oaks are commonly classified into two general groups, white oaks and red oaks. They vary greatly in grain and texture; but generally speaking, the oaks are moderately heavy, resilient, hard, tough, comparatively easy to work with tools, and are adapted to a number of finishes.

Quarter-sawed white and red oak are considered highly desirable and the attractive "flake" produced has always been in favor in furniture manufacture. "Quarter-sawed" means that the boards or strips have been sawed along the radius at right angles (or nearly so) to the annual rings in the tree. This results in beautiful grain and marking as well as resistance to wear. It is a more expensive process than the plain sawing method and also entails more waste of wood.

Red gum and sap gum.—Although red gum traces its lineage back thousands of years, it is comparatively new in furniture manufacture. Formerly it showed a distinct tendency to twist and warp during seasoning, so it was left standing in the forest. Methods of properly seasoning it have been found during recent years, and its use has tripled during the past 25 years. In 1928 it was the most-used furniture wood in this country.

It has a pleasing grain and color and takes finish very well, being adapted to high lighting and two-tone antique effects. In solid wood it is used for legs, posts, stretchers, frames, and supports. Because of its adaptability to stain similar to that of other woods, it is frequently finished in imitation of them. This procedure is practical and satisfactory if it is sold as red gum and not as a more expensive wood. It is also used to a very large extent in combination with other woods; the posts and rails might be of red gum with the veneered panels of a more expensive wood.

"Red gum" is the name of the tree; the heartwood of it takes the same name, but "sweet gum" is the title sometimes given it by lumbermen. The sapwood, termed "sap gum" which is light pink in hue, is frequently called "hazel pine" by Europeans. On the continent the heartwood is known as satin walnut, while it is sometimes mistakenly referred to in this country as gumwood. It ranges in color from rich reddish brown to dark chocolate brown.

Moderately heavy, moderately strong, red gum is one of our important hardwoods. It splits rather easily and is somewhat brittle. Its grain is soft, and dents which are hard to remove are rather easily acquired in this wood. When properly dried, it is satisfactory for many pieces of furniture.

Tupelo and black gum.—Although both of these species are called "gums" they are not botanically related to the true red gum. Both are newcomers in the field of fabrication and are giving satisfactory results. Tupelo and black gum are harder and heavier than red gum, with color ranging from white to light greyish brown.

Black gum, when quartered, exhibits a decided ribbon stripe. It is very difficult, even for the expert, to distinguish between tupelo and black gum. Tupelo is considered the superior wood of the two. It is often used for legs and frames of upholstered furniture, as well as in other hidden parts. It is also used for kitchen furniture.

Maple.—The need of the colonial settlers was for simple, substantial furniture, which could be made from lumber located close at hand. Maple and a few other woods were available. The designs they evolved were simpler, less ornate, and less sophisticated than the prevalent styles of London and Paris. To-day, maple, with its rich coloring, is considered one of our choicest furniture woods, and certain types of the early American reproductions made from it are most attractive.

Maple is used in decorative bedroom and dining room suites, and occasionally in living room pieces—tables, chairs, and sofas. It is frequently employed for commonplace furniture as well, for pieces where strength is a chief requirement. It is likewise extensively used for extension table slides and other movable parts because of its hard smooth surface.

There are two principal varieties, hard maple and soft maple. Hard maple is best suited to furniture making. It is used for many pieces where beauty of finish is desirable and also in frames for upholstered furniture, rockers, dowels, and stretchers. In the eighteenth century, it was frequently an inlay for mahogany.

Maple is heavy and hard, one of our most substantial cabinet woods. It wears well under abrasion and has good shock-resisting ability. The grain is usually straight, although wavy, curly, and bird's-eye patterns are much prized for veneers.

Soft maple is neither so heavy nor so strong as hard maple. It is lighter in color than the light, reddish brown hard species. Both varieties take a good finish.

Oregon maple, also known as Pacific coast maple, belongs half way between the hard and soft maples. It is giving satisfactory service in furniture.

Red alder is another west coast hardwood which has achieved prominence in furniture manufacture in recent years. It works easily, holds glue tenaciously, and is frequently cut into veneer.

Birch.—Birch is rated one of the strongest American cabinet woods and was used by early craftsmen as it is to-day by the creators of good furniture. It possesses an attractively figured grain that is enhanced by the modern stain finishes to which this wood is especially adapted. The form known as "curly birch" because of its intricate wavy grain, is esteemed highly as a decorative veneer. Like maple, birch is hard and will retain a fine finish for a long period. It is adapted to use in the early provincial styles, and in the modern bentwood designs.

The birch commonly employed in furniture is called "yellow birch." "Sweet birch" is also used; in fact, no effort is ordinarily made to separate the lumber and veneers from these two closely related species. The heartwood is light, reddish brown in color; the sapwood is nearly white. Both take stains equally well and in the darker stains blend to a uniformly even tone.

Because of its sturdy, hardy qualities, birch is also used where great strength is needed, particularly in frames for upholstered furniture and in chairs of all description. Other uses are for drawers, slides, partitions, and backing for veneer. It makes excellent plywood. Quite often it is combined with other less sturdy woods for strength purposes, for which it is particularly adaptable be-

cause of the ease with which it can be stained to imitate other woods.

Ash.—White, green, and black ash make up about 98 per cent of the lumber sold as ash. Both white and green ash are called "white ash" commercially while black ash is marketed under several different names.

The heartwood of both white and green ash is light, grayish brown in color, sometimes varying to reddish brown. Black ash has a somewhat darker heartwood. The sapwood of all three species is white.

The properties of ash make it a desirable furniture wood. It has an attractive figure in plain-sawed stock, is fairly hard and strong, is easily worked, bends well, and stays in place after manufacture. In properties of strength and hardness, black ash is slightly inferior to the other two species.

In spite of its desirable properties, ash is not one of our leading furniture woods, although it is used occasionally in the construction of medium grades of tables, chairs, and bedroom furniture. Perhaps its most important use is for upholstered furniture frames and for concealed parts, such as drawer sides and backs.

Basswood, also called "linden," is creamy white in color and has a uniform texture. It is used for core stock, being covered with harder and more decorative woods. It is also employed for tops of kitchen tables and for partitions in drawers and other parts of furniture.

Beech lacks pronounced grain or figure; it is strong and offers excellent wearing properties. It is much used in unexposed parts of furniture where its stiffness and hardness make it a most suitable material—in frames and interior work, in the under sides of chairs, bureaus, and chiffoniers; and in rockers, chair rungs, drawer slides, and slides for extension tables. It is subject to warping, twisting, and checking in drying, but these difficulties are controlled by careful methods. Beech dowels are also employed for joints.

Chestnut is somewhat similar to oak in general appearance, but it is not so universally used. The wood is moderately light in weight, with heartwood grayish brown. It has been growing more popular during recent years and is used for some types of bedroom, dining room, and occasional furniture—especially tables—as well as for outdoor furniture. It is often employed as a core wood for veneered top, side, and front panels, and for furniture backs because it holds its place with little or no warping or twisting. The wood is not so hard as oak and is finished in the warm, mellow, Jacobean hue.

Sound "wormy" chestnut is wood which has been worm infected, but which is perfectly sound. Naturally the worms are not alive in the wood after preliminary processes of manufacture. It is especially adapted to core stock where its small blemishes are not visible.

Cherry.—"Solid cherry!" A word of pride may be distinguished in the voice of the owner of early American secretary-desk, chest of drawers, or other cabinet work, when she utters those two simple words. Fruit woods such as apple and pear were used in eighteenth century furniture; and cherry was also one of the favorites because of its natural properties, an ability to "stay put," minimum warping,

and good wearing qualities, not to mention its warm, reddish brown coloring which mellows with age and exposure.

It resembles maple in grain and figure, whereas it approaches mahogany in color. To-day, it is scarce and consequently infrequently used.

Elm may be used for framework of upholstered furniture, being strong, able to stand shock, and holding screws well. It is used also in kitchen chairs and cabinets, as well as in less costly furniture for other parts of the home. Soft elm (a hardwood) is the most commonly used. It is not quite so strong as rock elm which is also employed. Its wavy surface finishes well.

Holly is a hard, white wood which finishes beautifully. Consequently it is in demand for inlays and marquetry. Its striking appearance offers a sharp contrast to dark woods and it is used in small novelty furniture. Dyed black, it resembles ebony.

Yellow poplar is not in any sense a true poplar; it has picked up this name which has clung to it since the days of the Puritans. Yellow poplar and northern white pine were two of the woods used by the early settlers. For certain purposes, the wood can not be equaled. Its popularity is based upon its many admirable qualities. The heartwood of virgin yellow poplar is light yellow, which deepens upon exposure and age to a mellow brown. The wood is strong for its weight, works exceptionally well, takes glue well with a minimum of warping and twisting. It is a favorite for core stock; it is also used for solid parts, framework of upholstered furniture, kitchen furniture, cabinets, etc.

Magnolia from the South closely resembles the white sapwood of yellow poplar and is often marketed with it. It is somewhat harder and heavier and is not considered equal to yellow poplar, although it is used for many of the purposes in which yellow poplar is employed.

Hickory is strong, tough, elastic and very resistant to shock. It would seem admirably adapted to use in furniture were it not for the fact that these qualities make it excessively hard to work. A few producers employ this wood, choosing in most cases the pecan hickory. It is reddish brown in the heartwood; the sapwood is white. Although it combines the vigorous qualities, it shrinks excessively in drying and is subject to attack by boring insects.

Sycamore is favored for many uses in furniture fabrication. It is not frequently used as a surface wood although it has a beauty of figure when quarter-sawed. An interlocked grain wood, it has a tendency to warp unless properly dried.

Faux satine, or false satinwood, is a veneer made from cypress stumps, recently used in furniture for contrast.

Cottonwood.—The name "cottonwood" is applied to about 12 American species which are members of the same genus and whose woods are similar in physical properties and appearance. Cottonwood is grayish white to light brown in color, is light in weight, and fairly straight grained. Because of its softness and uniform texture, plywood of this species is widely used by the furniture industry where thin panels are required. Cottonwood lumber is also an important raw material for the concealed parts of all kinds of furniture, and for the exposed parts of kitchen furniture.

Softwoods Used in Furniture.

Within recent years, many western softwoods have been used in furniture manufacture. They have proved serviceable for many uses. The outstanding property of these woods is the ease with which they may be worked. The species are: Douglas fir, Sitka spruce, west coast hemlock, western red cedar, pondosa pine, California white pine, Idaho white pine, sugar pine, and redwood.

California redwood burls are often used for decorative purposes on chair backs, drawer fronts, and other conspicuous parts of furniture. This wood is most popular on the Pacific coast.

The *Southern yellow pines*, especially the shortleaf pines, are being increasingly used, particularly for kitchen furniture, dressers, cabinets, china and linen closets, and bookcases. Yellow pine is often used in foreign countries as well as in America for hotel pieces and for certain lines of bedroom and kitchen furniture, and for the framework of cots and bedsprings. The yellow pines are resinous, hence care must be exercised in finishing and painting.

Eastern red cedar, also called aromatic red cedar and Tennessee red cedar, is a wood much used for chests. The odor of this wood is strongly aromatic. Chests and other furniture of this wood, or lined with it, offer resistance to moths if kept tightly closed. The slow volatilization of the cedar oil, when sufficiently concentrated, destroys undeveloped moth larvæ, although it does not kill the adult moth.³

Imported Hardwoods.

Of the imported woods used, mahogany is the best known. The others listed are used principally to secure unique decorative effects in inlays, marquetry, panels, and other forms where the color contrast is pleasing against the background of domestic woods.

True mahogany.—Sir Walter Raleigh's crews, the story goes, repaired the deck of a ship with light, reddish brown wood secured on a West Indian island. Upon their return, Queen Elizabeth was so delighted with the beauty of the material that the gallant Sir Walter ripped the heavy planks from the decks, had them made into furniture, and presented them to the sovereign.

Mahogany does not warp easily, is easy to work, and takes stain well, although some pseudocraftsmen have obscured the wood's natural beauty with muddy finish. "Crotch" mahogany—flaming swirls created where the fibers twist and struggle to determine whether they will go into the tree trunk or the branches—is one of the most marvelous figures in wood, but ironically, this pattern is the most prone to "check." Mahogany is not to be misused, for its beauty may be marred by abuse.

True mahogany now comes from certain regions in the West Indies and Central and South America. It happens that true mahogany is found in very limited quantities in Florida, but it is not produced there on a commercial scale, the places named above producing the bulk of the true wood which goes into furniture in this country.

³ See Department of Commerce Commercial Standard CS26-30, Aromatic Red Cedar Closet Linings, obtainable at 5 cents per copy from the Superintendent of Documents, Government Printing Office, Washington, D. C.

A great many of the woods growing outside the area already referred to are sold under the name of mahogany. Some of these species may or may not be related to true mahogany. Among the best known is Khaya (African mahogany) which is a serviceable wood possessing beautiful grain, but it is not regarded as being equal to the true mahogany of the Americas in strength properties. The identification of the various woods sold under the name of mahogany is a highly technical matter and so the purchaser of the furniture should, if possible, ascertain the region of the world where the wood, sold as "mahogany," was produced.

Since so much depends on the variety of the mahogany used, the strength properties may be called variable. In many pieces of furniture, it would be advisable to use a wood such as birch or maple for the slender legs of chairs or the runners of rocking chairs, where a stronger wood is required.

Prima-vera, sometimes called "white mahogany," comes from Mexico and Guatemala. It resembles mahogany somewhat in grain, but is creamy yellow in color. It is used largely in veneer for decorative contrast.

From the Philippine Islands come the hardwoods, tanguile and red lauan, which range from pale to deep red-brown in color. They are somewhat prone to fade under bright light, but if properly stained should not change color.

Purpleheart, amaranth, or violet wood, as it is variously known gets its name from its color. Its main use is for inlay.

Ebony is a name applied to many black-hued woods, although those from the genus *Diospyros* are the only true ebonies. True ebony, strangely enough, may be detected because it cracks, whereas imitations do not. Most of the present commercial ebony which is used for inlay, handles, and keys of musical instruments comes from the southern part of the Indian peninsula and from the island of Ceylon.

Koa is a moderately hard, chestnut-brown wood used in some cabinet work. It comes from Hawaii, where it has been used extensively in making ukeleles.

Hura, or possum-wood, is pale yellow, creamy white, grayish yellow to yellow-brown. It is light, soft, and firm, having about the same consistency as basswood. It is easy to cut, easy to glue, holds its place well, and is very attractive when stained. It has a slight tendency to be woolly or fuzzy. It comes from Colombia and tropical South America; it is also found in Mexico and grows southward to Costa Rica.

Amboyna burls come from the Dutch East Indies, are fragrant, light reddish brown to orange in color, very hard with beautiful figures in mottles and curls, and used mainly for inlays.

Padouk, also variously known as "padouk," Vermillion, and East Indian mahogany, may be divided into three well-known species which have a color ranging from deep crimson through cherry red, pink, and reddish to brown. These, however, bleach to a golden brown upon exposure to light and air. They are hard, durable, and firm, and nearly impervious to climate and humidity. They come from Burma, the Andaman Isles, and the west coast of Africa.

Rosewood is a decorative, hard, heavy, straight-grained wood from Brazil, red-purplish in color. Tremendously in vogue during the Victorian era, it is not much used to-day owing to the vagaries of public acceptance of fashion. It has, however, many of the attributes of the finest cabinet woods. Its greatest use is in veneers.

Satinwood, coming from Ceylon and the West Indies, is usually cut on the quarter to bring out the "ribbon" stripe. It is used mostly as veneer and inlay and is quite costly. The grain is fine, smooth, dense, and even; the surface is satiny and lustrous, possessing much "fire." *Satinwood* for antique furniture came from Porto Rico, but its supply is so depleted that Ceylon is now the greatest source.

Snakewood, or letter wood, a very hard wood growing in the Guianas, is reddish brown with dark patches resembling snake skin, used principally in cabinet work.

Teak grows in Burma, the Malay Peninsula, India, and Java; is golden brown in color; is moderately heavy and hard; is easily worked; and shrinks, swells, and warps little. These factors, together with its resistance to termites or white ants, make it popular in the Tropics. It contains a resin or oil which holds its place for years, and retards decay, as well as being one of the reasons for little shrinkage or swelling. Comparatively little teak is used for furniture in this country. African teak is in no way related to genuine teak and does not have its qualities.

Thuya burl, a choice, very hard wood used in inlays, comes from Morocco in northern Africa. These burls are hidden deep in sand and natives plow for them. They vary from light to dark brown in color and the "eyes" are free from bark. They are used principally for veneer.

Tulipwood from Brazil is so scarce as to be used chiefly for inlays. It is heavy and hard, and has red, yellow, or purplish stripes, resembling certain tulips in color.

Zebrawood is a native of Africa. A striking pattern of black stripes across a field of yellow makes this a favored wood for inlays, its contrasts affording great inspiration to the designers of "art moderne" furniture.

Willow, Rattan, Reed, and Fiber.

There are four materials from which much furniture is made, which are often confused in the mind of the layman. Some of this furniture is used on porches and in sun rooms; some is used in gardens; some is suitable for any room in the home. Willow is an American hardwood; fiber is a wood pulp product made principally from domestic softwoods. Rattan is an imported hardwood, while reed is the heart or core of rattan.

Willow branches or withes are used for the manufacture of wicker furniture. Willow is the only native wood adapted to weaving. Formed into artistic designs by skilled craftsmen, it is much used on porches and in sun rooms. It takes colors well and consequently offers an opportunity for bringing bright and gay tones into the home. Although it is particularly adapted to porch use, individual pieces are acceptable in almost any room in the house.

While many other forms of furniture such as that made out of fiber, reed, rattan, and raffia, have sometimes been called "wicker"

furniture, technically only willow furniture belongs in this category, and the terms "willow" and "wicker" are really synonymous.

Rattan, an Asiatic vine, is used for porch and outdoor furniture. Because it will not take color, it is sometimes scorched by blow torches for decoration.

Reed, or stick reed, as it is often called, is the heart of rattan, an Asiatic product. The hard, outer coating is pared off and used for cane seating. The pith or core is formed into furniture much as willow is worked.

Fiber furniture is a paper product made from wood pulp. It is formed into strands, sometimes over steel wire, and thence woven by loom into furniture. Wooden frames form the basis for most fiber furniture, which is quite inexpensive and often colorful.

Chapter 6.—PREPARATION OF WOOD FOR FURNITURE MANUFACTURE

FROM the forest to the home, wood as a raw material passes through many processes before assuming the role of a finished product. Wood ordinarily arrives at the furniture factory as rough lumber or as veneer. The first type of material is a product of the sawmill, while the latter is a product of the veneer plant. In this rough classification the raw materials, such as cut-to-size small dimension stock, veneer core stock, moldings, carvings, excelsior, and other forms of wood, are disregarded,



FIGURE 10.—Transporting logs to the sawmill

The Manufacture of Lumber.

The various operations involved in the transformation of the forest tree into rough lumber could easily be made a long and perhaps interesting story. Such a story would include the preliminary operations of timber estimating, laying out and constructing logging roads and railroads, establishing logging camps, tree felling and bucking into log lengths, skidding logs to loading points, and transporting logs to the sawmill.

At the sawmill, the logs are first cut by various types of saws, into material of standard thicknesses. The first sawing operation determines, to a large extent, the quality and figure of the finished lumber. The saw operator or sawyer is a well-trained, skilled, and highly paid worker who decides on the method of cutting the log so that it yields the maximum of high-grade material as well as the desired quantity of figured lumber.

Other saws and machines convert the stock into square-edged, rough lumber of various standard lengths. The lumber is then classified into grades depending on the number and size of defects such as knots, splits, bark, wormholes, decay, etc., as they occur in each board.

The Seasoning of Lumber.

Lumber as it comes from the sawmill contains a large quantity of moisture. Before it is acceptable as furniture stock, the excess moisture must be removed. The proper drying of furniture stock is very important. Wood, it should be remembered, contains hundreds of tiny cells per cubic inch. Each cell shrinks with a loss of moisture from its walls; this shrinkage affects the neighboring cell, and thus the size of the whole piece is changed. The use of improperly seasoned or unseasoned lumber in the manufacture of furniture results in the warping, shrinking or checking of parts of the finished article.

The seasoning of lumber for furniture manufacture is usually accomplished by two methods. The first method involves the natural drying resulting from exposure to atmospheric conditions, known as air seasoning; the second method, is accomplished by the application and positive control of three factors—heat, humidity, and circulation of air—to the stock in a closed chamber, and is known as kiln drying.

After the rough lumber is graded, it is usually placed in ventilated piles in the mill yard for air seasoning. Certain species such as gum and poplar which are especially susceptible to staining, are often steamed or chemically treated before being air seasoned. The above procedure varies with the different kinds of lumber. For example, yellow pine and many other softwoods are sent directly to the dry kiln rather than being air seasoned.

Through air seasoning, the moisture content in wood is reduced to a minimum of about 15 per cent, which is not sufficiently low for furniture purposes. The dry kiln of to-day, the product of about 30 years of research and experimentation, will dry lumber to the approximate moisture content which furniture will assume in service; that is, 5 to 8 per cent. The value of the modern dry kiln will be appreciated when it is realized that through its use good drying is accomplished in one or two weeks. Nineteenth century manufacturers obtained indifferent seasoning by drying their stock for months in the open air, followed by additional months of seasoning in a heated factory.

Thus, modern drying methods make possible the production of raw material for furniture which is much better conditioned than that used in past decades. Warped table tops, sticking drawers, and gaping joints were the rule rather than the exception in the furniture produced in grandfather's time. Such defects were caused by the shrinkage and swelling of wood due to its giving off and absorbing moisture from the air. Although present-day drying has not entirely eliminated the occurrence of these shortcomings, the situation is much improved; and, under average service conditions, extreme shrinkage or swelling may be traced to improper kiln drying. Unfortunately, the effect of improper kiln drying is not evident in the finished furniture when purchased by the consumer. It may take

a year after it is in the home before the results of improper kiln drying become evident.

The above statements regarding kiln drying refer to the artificial seasoning of hardwoods. The drying of some of the hardwood species is a difficult process requiring efficient equipment, careful observation, and technical supervision. This is especially true as applied to the drying of thick hardwood stock. In fact, it is generally considered impractical to kiln-dry a number of the more refractory hardwoods in thicknesses exceeding 2 inches.

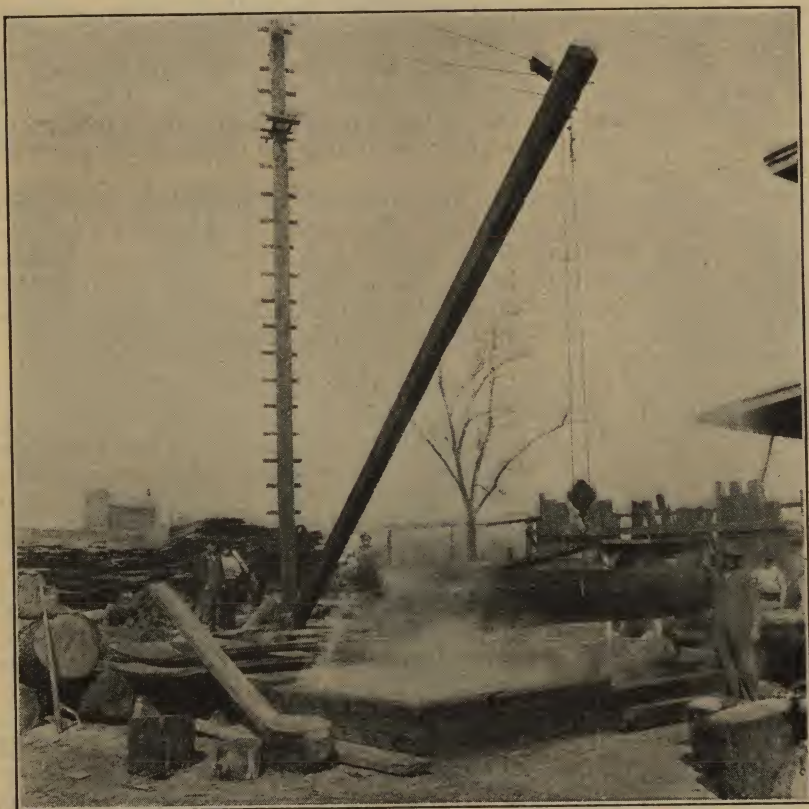


FIGURE 11.—Figured walnut log going into a steam vat. After several hours the wood is thoroughly softened, the bark comes off, and the log is ready for the rotary veneer lathe

Because of their comparatively simple structure, the softwoods are less difficult to season. They air season more rapidly than do the hardwoods and thick stock may be successfully kiln dried by exercising ordinary precautions.

The Manufacture of Veneer.

It is a common characteristic of wood, particularly in the growth of certain "freak" trees, to develop eccentricities of figure and grain. Beautiful mottles, bird's-eyes, curly grains, and many other striking markings are examples of the effects produced by nature. Obviously, the trees which have these types of markings are very valuable as

furniture woods. If they are sawed into lumber their beauty is utilized only in part; therefore, the practice is to cut the logs of such trees into thin sheets of wood known as veneer.

The selection of veneer logs is a highly specialized business requiring skill and long experience. The lumber markets of the world are combed by experts for the purpose of selecting certain logs, stumps, etc., which will produce veneers of exceptional beauty and value. Records are available showing the sale of a mahogany veneer log on the London market for \$15,000. Walnut stumps are said to have been manufactured into veneers valued at \$6,000.

At the present time there are three commercially important processes for producing veneers: (1) Rotary cutting, the most important; (2) sawing; and (3) slicing. Practically 90 per cent of

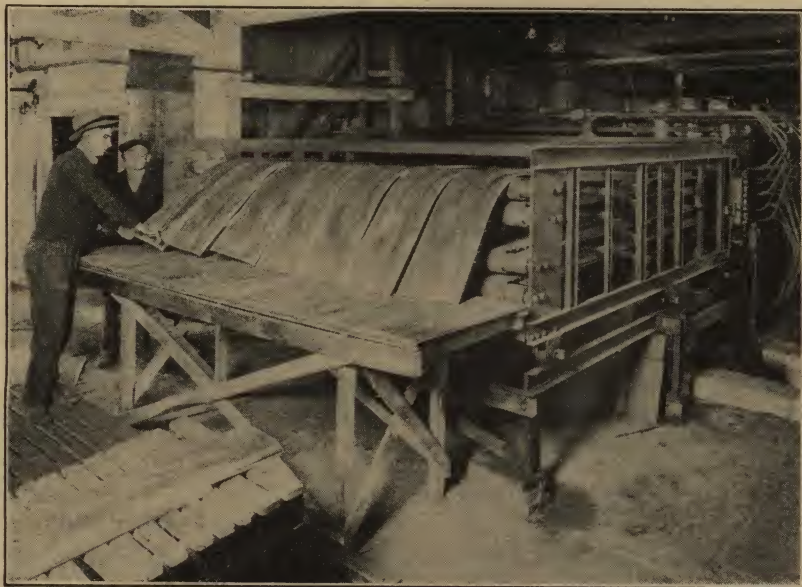


FIGURE 12.—This picture shows veneer coming through a mechanical veneer drier which removes excess moisture, rendering the veneer less apt to warp, twist, check, or break off

the veneer produced in this country is by the rotary cutting process; approximately 5 per cent is sliced, and 5 per cent sawed.

In the rotary process the logs are usually thoroughly softened by steaming or boiling preliminary to the cutting process. They are then placed in a lathe and turned against a knife. The thin sheets of wood are produced in an "endless" ribbon until the log is cut down to a minimum diameter or until defects become so numerous or of such character as to make it unsuitable for veneer.

In the sawing process, the log is placed on a carriage and sawed by a thin, circular saw. It is obvious that a considerable portion of the log is lost in sawdust and for this reason sawing is used only on those woods which can not be advantageously cut by other methods.

The slicing process is somewhat similar to sawing in that the log is secured to a block and drawn at an angle against a fixed

knife. Thin sheets of veneer of approximately the same width as the face of the log, are produced without waste.

In the slicing and sawing processes—more particularly the former—the veneers as cut from each log are carefully collected and kept together so that it is possible by skillfully matching the grain of two or more pieces to produce artistic designs and figures. Two adjacent sheets will have practically the same pattern and if one is reversed and the two laid edge to edge, a matched or balanced appearance will result, enhancing the beauty of the wood, often producing an artistic pattern of rare beauty. This also makes possible the production of a number of matched panels of almost identical appearance, used for table tops, panels, etc.

After manufacture, the veneers are placed in racks for air drying, or are artificially dried on a moving belt or rollers, passing over applied heat.

Chapter 7.—SOLID AND VENEERED CONSTRUCTION

SOME woods combine nearly all of the properties desirable in a furniture material. Other woods have as their most valuable characteristic, beauty of grain, figure, and color. Still others have most of the physical requisites of a good furniture wood but lack the decorative qualities. These various combinations of characteristics are responsible for the use of certain woods for specific purposes.

Woods in the first group may be employed in the manufacture of all types of furniture; but, unfortunately, those of our woods which are of a high percentage of desirability are naturally in heavy demand and command a price which is often prohibitive. Woods of the second group, in which beauty is paramount, find their most valuable use on exposed surfaces; and those species which are strong but not beautiful are most suitable for such uses as legs, braces, stretchers, concealed parts, and as a base for the more attractive woods.

For example, ash makes an excellent hoe handle or, in furniture, an excellent frame for upholstered pieces; burl walnut, crotch mahogany, and other woods which have beauty of figure and grain are unsuitable for use as hoe handles and not good for upholstered frames or parts which must bear considerable strain, but are well adapted for use in highly figured table tops, drawer fronts, and other surfaces where beauty is desired.

For these reasons, the practice of cutting the beautiful and valuable woods into veneers, or thin sheets of wood which are glued to surfaces of less beautiful woods, has been adopted. The result is plywood, formed by the gluing together of several layers of wood, one superimposed on the other, with adjacent grains at right angles. The terms "veneered construction" and "plywood" may be used interchangeably. The former is the historic term, while "plywood" is much used by manufacturers, inasmuch as it is a good technical description and avoids the unfortunate, uncomplimentary meaning frequently associated with anything that is veneered.

Thus, in the purchase of furniture, the consumer is faced with the problem of making a selection from many kinds of wood as well as from the various types of design. He must also make a decision in favor of solid or veneered construction.

Solid-wood Construction.

Solid-wood construction presents many advantages which should be considered. Many persons glow with an inner satisfaction in the knowledge that the wood which shows on the surface of their furniture is the same within and without.

Solid wood may be carved, which is not practical in most types of veneered furniture, although provision may be made for it. Likewise, if solid wood is scratched, dented, or chipped, there is no danger of a second kind of wood revealing itself. Solid wood worn down by use does not change in appearance, grain, or figure. If it is to be

refinished, it may be planed down or sanded with coarse sandpaper. Solid wood will not peel off.

Although neither solid nor veneered furniture can be said to be free from the stigma of poor workmanship, solid wood furniture is not open to so many possibilities of poor manufacture as is veneered construction, principally because solid wood has less complication and hazard in workmanship. The owner of a solid piece need have no anxiety about the proper relative drying of the veneer or the core. Improper gluing can not cause the surface of his furniture to peel or form a "blister" in the center of a beautiful surface. On the other hand, solid wood may develop serious checks and splits, due



FIGURE 13.—That veneer will endure through the centuries is evident in this 150-year-old French commode; rosewood is veneered on oak

to lack of humidity in modern heated homes; the wider and thicker the piece, the greater the risk. This is somewhat overcome in good manufacturing practice by gluing together narrow widths to form wide surfaces; a table top 16 inches wide, for instance, should be built up of at least three strips and as a further precaution, the pores of the wood should be completely sealed on both sides.

Veneered Construction.

Masterpieces of veneered furniture have come down through the years; early examples trace back to ancient Egypt. Veneers then were made for kings. George Hepplewhite was an eighteenth century designer who used veneers most effectively.

Most of the furniture made to-day is of veneered construction¹ which as compared with solid-wood construction, has certain advantages and some disadvantages. In the face of this confusion the purchaser should know the facts in order that he may buy with a knowledge of the principles involved.

A recent decision of the United States Circuit Court of Appeals, sixth district, rendered by Circuit Judges Moorman, Mack, and Hickenlooper, says in part:

* * * The finest of all modern furniture having exposed flat surfaces, such as tables, desks, and the like, is constructed of laminated wood,² with the grains of varying thicknesses running in different directions so as to prevent cracking and warping, and with a layer of walnut or mahogany veneer secured to the exposed surface. Indeed, such is the only practical way of constructing flat surfaces of large area, and all the beautiful effects of matched graining may be obtained only in this manner. The practice is substantially universal.

The important reasons for the increased use of veneered construction may be classified under artistry, serviceability, and economy.

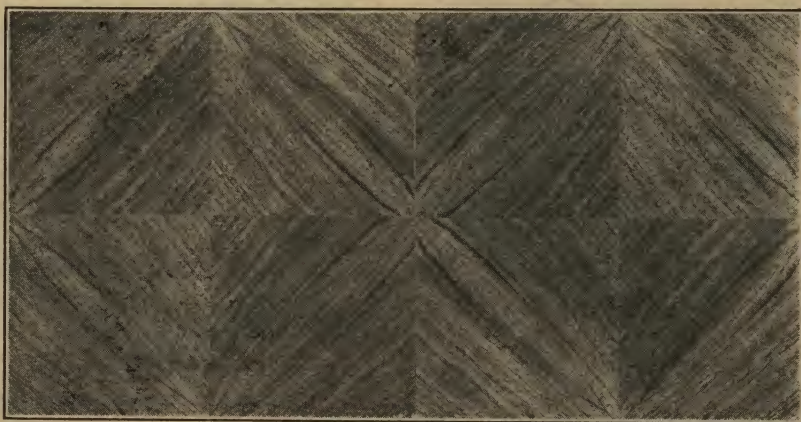


FIGURE 14.—Matched panels in the front of cabinet or sideboard, or on table tops imply veneered construction. Close examination will show the joining of two strips of veneer

From an artistic or esthetic viewpoint, the use of veneer is responsible for beautiful and unusual effects which can not be produced in solid furniture. With veneers it is possible to secure patterns, the beautiful intricacy of which amaze and delight the eye. These exquisite figures are not usually found in sawed boards.

In panels, such as table tops or drawer fronts where beauty of figure is desired, veneers serve their purpose to the best advantage. In this connection, it should be remembered that the base, or core, of these panels may be of the same wood as that placed on the surface but without the outside beauty of figure. Indeed, the exposed edges of cores are usually banded with the same species as the face veneer.

¹ "Veneered construction" means the use of veneer in the tops, sides, drawer fronts, and other exposed parts of furniture. "Solid construction" means the use of lumber which is not faced by veneers in exposed parts of the furniture. "Exposed surfaces" mean those parts of the furniture exposed to view when the furniture is placed in the generally accepted position for use in the home. Construction of hidden parts, such as dresser and mirror backs or bottoms of drawers, does not enter into these definitions.

² "Laminated construction" means wood built up in layers, each layer being a lamina or ply. *

The physical advantages of veneered construction make well-built, veneered furniture equal, and at times superior, to that of solid-wood construction in strength and service properties. In order to make it more serviceable, practically all jewelry requires the use of sturdy as well as precious metals; for the same reason, in both the interior and exterior surfaces of fine buildings, decorative face materials are used over the substantial inner structure.

The surface of the panel is the beautifully figured sheet of veneer. Beneath it is a layer of glue; "cross-banding" is then placed at right angles in grain to the face veneer, thus checking any tendency of the surface wood to strain or warp. Beneath the cross-banding is another layer of glue and then the core stock, which is sometimes composed of several pieces with the grains running in varying directions and glued together under high pressure, thus counteracting the stresses which occur in the various sections and increasing the strength of the veneered section.

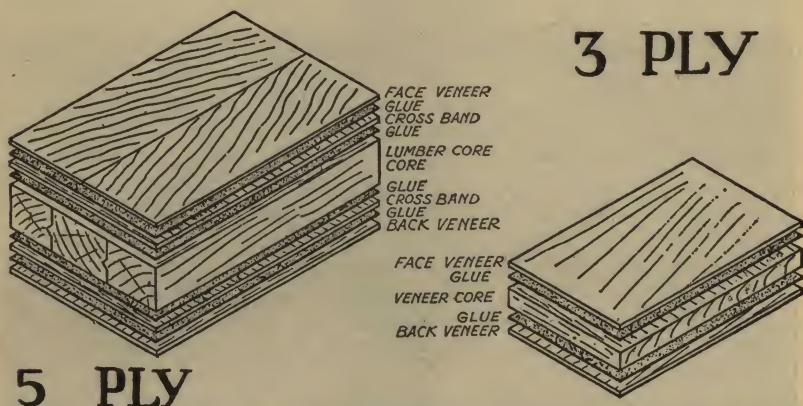


FIGURE 15.—Plywood; left, showing 5-ply construction; right, showing 3-ply construction

If the reader wishes to test the strength advantage of the cross-banding principle, he can take two thin strips of wood with the grain in one strip running parallel to the grain in the other, superimpose one on the other, and try to bend them. It will be found that they break without difficulty. If, however, these strips are placed so that the grains run at right angles to each other, about twice as much effort will be required to break them as was necessary when they were placed in the first position. When an effort is made to split a plywood container into kindling, the strength of glued layers is at once evident.

The cross-banding principle, when correctly applied in plywood, also tends to prevent the panel or section from warping or changing its shape through absorption and giving off of moisture. Since wood swells and shrinks in varying degrees along and across the grain, the gluing together of the various sections, with the grains running at right angles to each other, prevents distortion caused by a change of size in one direction only. To-day, with steam, vapor, hot water, or hot air heating systems in most houses, the nearly dry air offers a severe test for any but veneered furniture.

As a physical factor in favor of glued stock, it is interesting to know that during and since the World War, glues have been evolved which are as strong, if not stronger, than the wood itself. For this reason, glued-up stock when subjected to strength tests, often fails in the wood rather than at the glue joint. A properly-laid veneered panel is approximately 80 per cent stronger than solid lumber of equal thickness.

Almost without exception, the woods which we consider valuable because of their beauty, sell on our markets at prices which preclude their use in the manufacture of solid-wood furniture for the typical consumer. The utility of these rare and beautiful woods will be considerably increased if they are used in the form of veneer rather than lumber, since the surface area will be multiplied about thirty times. The decreasing supply of our valuable furniture woods makes intelligent utilization advisable as well as economical. Furthermore, through the veneer-cutting methods, the beauty of the grain will be brought out to far better advantage than is possible in cutting the same wood into boards.

Another economic factor in favor of the use of veneers in furniture construction is the fact that cores may be made up of woods which contain every element of strength, but which have blemishes that destroy their value for exposed surfaces. The use of such slightly-blemished core stock is an example of economical and intelligent utilization of wood.

The economy of using veneers is also evident in the fabrication of curved furniture surfaces. It is difficult to make solid wood into curved surfaces economically or successfully for certain purposes. Joints may show, or ends may be exposed, and a curve so made may break easily no matter how much care is given to its formation. However, thin sheets of veneer, bent in forms and between which plastic glue is applied, form—when dry—strong, substantial, curved shapes showing a beautiful figure. Vanities, bed ends, round or oval table front rails, and serpentine fronts such as those on Governor Winthrop desks, benefit by this process.

In this discussion of the advantages of veneered construction, it has been assumed that the best materials and workmanship are employed. If poor or weak glue is used, or if it is improperly applied, an inferior product is the result; and even though the furniture which results is low in price, it is likely to prove more expensive in the long run than higher priced furniture which is properly constructed. The wood used must be thoroughly and carefully seasoned so that it will not shrink or swell excessively in service; and care must be exercised in cross-banding, or the advantages of this process are largely lost.

Although the reputable dealer will not hesitate to inform his customer as to whether a particular item is of solid-wood or veneered construction, most purchasers derive considerable satisfaction in being able to determine for themselves the type of construction used in the furniture which is being examined.

Well-constructed, veneered furniture is extremely difficult to distinguish from solid stock, since both solid and veneered wood panels may consist of several strips. If inspection discloses that one strip runs the full length of the panel and the adjoining strip is composed

of two or more pieces, it is reasonably certain that plywood construction was employed. A difference in grain will usually indicate where one piece ends and the other begins.

Certain beautiful figures obtainable only in veneer sometimes are applied clumsily. For instance, the purchaser may find a panel in

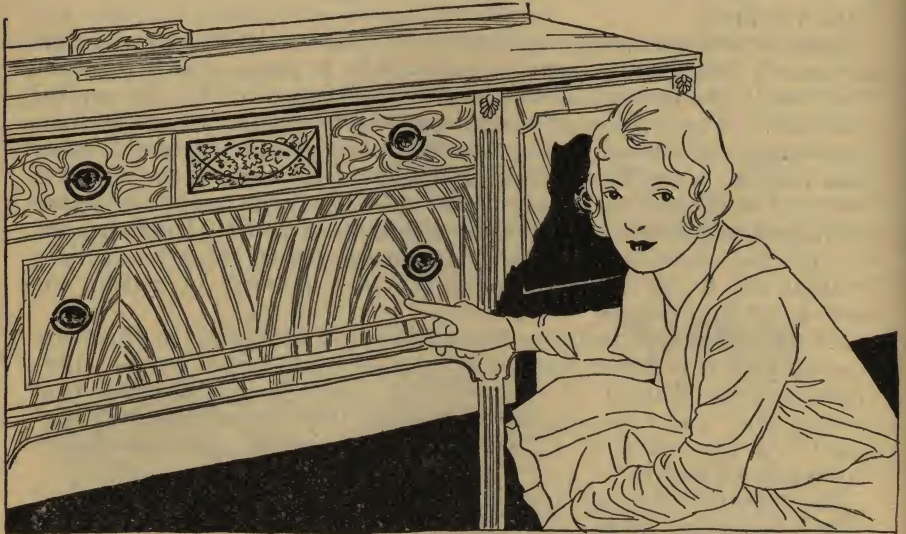


FIGURE 16.—This shows how matched panels of crotch figure are used. Such pattern is usually obtainable only with veneer, and is assurance of this type of construction. The spot at which the finger is pointing shows well-matched veneers. There is a slight variation in the matching of the figures on the left. Such irregularities may be avoided

which a beautiful crotch pattern ends abruptly, its apparent counterpart being an inch or two higher or lower than the adjoining piece; or there may be a decided difference in grain and in color between adjacent strips, very plain evidence of inferior craftsmanship.

Chapter 8.—CONSTRUCTION FEATURES

BENEATH the skin of the human body one finds the bones, veins, sinews, and arteries which provide the strength, vitality, and lasting qualities of man. Under the outer surface of furniture, also, one will find the strength-making features which determine whether or not the piece will endure when subjected to the wear and tear of home usage.

For decorative reasons most of the structural details of a piece of furniture are hidden. There are certain tests, however, which will give an inkling as to its construction: A chair may be turned upside down; drawers may be pulled out of cabinets. The furniture salesman should be well informed on construction details and able to supply the desired data. If he can not answer, he will call the buyer who should be able to give the information. Find out how the furniture is put together. Is it mortised and tenoned or is it doweled? (See fig. 20.) Either joint is good.

The "upside down" test should also give the prospective purchaser some general indications about the entire piece. If the bottom of the piece is sanded and shows no splinters, and if it is given a coat of finish to prevent atmospheric and insect invasion, well and good. Not all acceptable furniture is finished on the bottom, but a goodly portion is. Are the drawers loose? If so, they will rattle at the least provocation.

The consumer will do well to look for nails. An occasional nail does not necessarily imply an inferior construction, but it is just as possible to tack a piece of furniture together so that its period of serviceability is decidedly brief, as it is to baste a dress for the same purpose.

Legs or Posts.

Before buying, it is wise to scrutinize very carefully the back posts of chairs that are being considered, and also the legs of beds,



FIGURE 17.—Upside down test

tables, and cabinets. The pieces should be shaken to see if they stand squarely upon the floor; no one wants a tipsy table nor a wobbly chair. If they are satisfactory on the floor of the furniture store but are shaky in the home, the floor should be inspected carefully before blaming the furniture man. In many cases it will be found out of line.¹ This may be determined by stretching a string across the floor.

There are three important types of legs, of which the post sawed from a single board according to a pattern is the most common. This type is very satisfactory under most conditions, although it is best for the consumer to inspect the lower part of the leg very carefully. If there is a very evident short length of grain across the

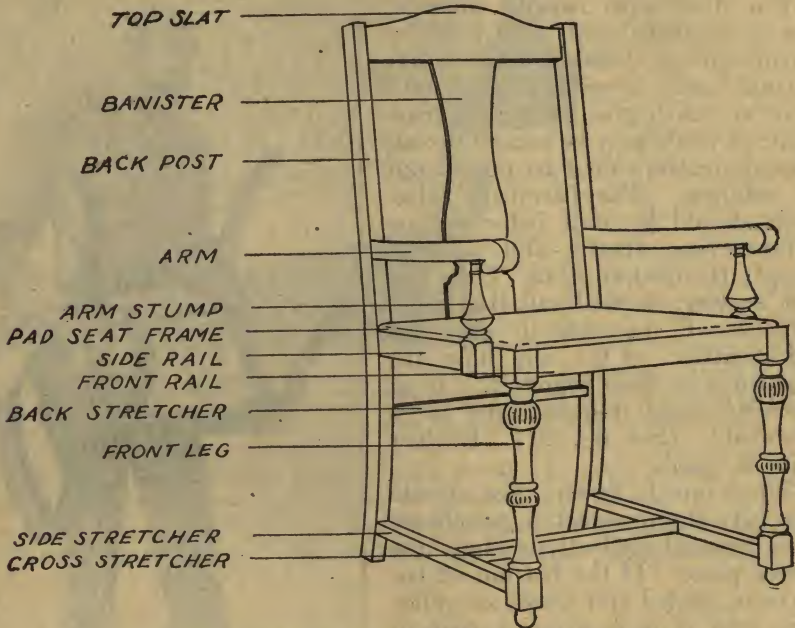


FIGURE 18.—This shows the names of the parts of a chair

post where it starts to slope backward, there is the chance that the wood may shear or break at this point. (See figs. 19A and 48.)

In Figure 19B the post was bent to form after the wood had been softened temporarily in a steam vat to make it pliable. Note that the grain of the wood follows the shape of the post and it will therefore stand unusual strains. On the other hand, remember that bent posts are apt to change their shape when kept in places where extremely high relative humidity prevails.

Some thick legs are made up of layers of wood glued together; these are called "built-up" legs. One purpose of this is to utilize

¹ See How to Judge a House, by the National Committee on Wood Utilization, Department of Commerce, available at the office of the Superintendent of Documents, Government Printing Office, Washington, D. C. Price, 10 cents.

wood which might otherwise be wasted; another reason is the avoidance of checking and cracking which may occur in the drying of large pieces of lumber. This is not an evidence of structural weakness if the proper glue has been used, for good glue is at least as strong as wood. The built-up leg is usually employed where there are solid, substantial knobs or block-like patterns. With different pieces of the same wood, perhaps varying in natural color, grain, or pattern making up the leg, extreme care should have been exercised in the finishing room at the furniture factory to stain the adjoining layers of wood to an identical color. Close examination of built-up legs will repay the effort. (See fig. 19C.)

Joints.

Inasmuch as the joints of furniture are hidden, it is necessary to have confidence in the integrity of the distributor and manufacturer

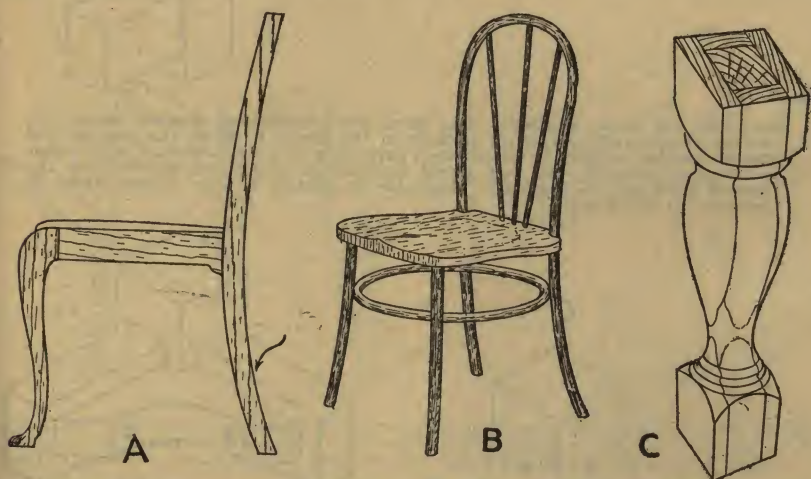


FIGURE 19.—A shows a chair in which the legs were sawed to form from a board. If there is a short length of grain, as shown by the arrow, there may be possibility of a break at this point. B shows a chair in which the posts are of bent-wood, and the grain parallels the shape of the posts throughout. C shows a built-up leg wherein several blocks of wood are glued together, and the pattern is turned on a lathe, giving the shape desired. The lines indicate the glue joint of the various pieces of wood.

of the furniture chosen. Sometimes a printed description of the construction accompanies the furniture, specifying what type of joints are employed as well as designating the woods used. In the chapter on finish, it is pointed out that in woods which are joined properly, care is taken in sanding, staining, and polishing the adjoining pieces so that there is little evidence of where one leaves off and the other begins.

Certain points in furniture construction apply to all pieces, be they tables, chairs, or cabinets, but joint construction varies in different pieces. The following paragraph from the furniture specifications of the Quartermaster Corps of the United States Army, is worth considering:

In order to be strong and durable, furniture shall be securely framed and braced throughout, and mortised and tenoned or doweled, in the most skilled

and workmanlike manner. Parts subject to stress shall be strengthened with glue-blocks and screws.

What does all this mean? A pictorial explanation will be found in the diagram of the various joints in Figure 20.

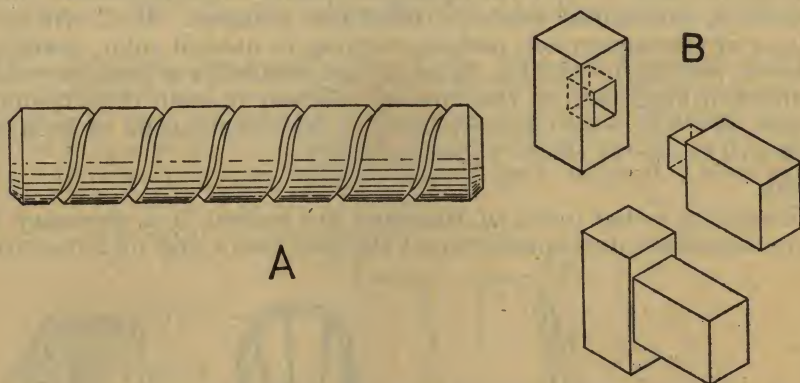


FIGURE 20.—A shows a dowel. The spiral and longitudinal grooves permit the escape of air, and prevent air pockets in the glue. B shows the mortise and tenon, another method by which wood parts may be joined together with a fair measure of security. In both dowel and mortise and tenon construction the use of good glue is essential. The glue is applied to the portion which is inserted in the socket

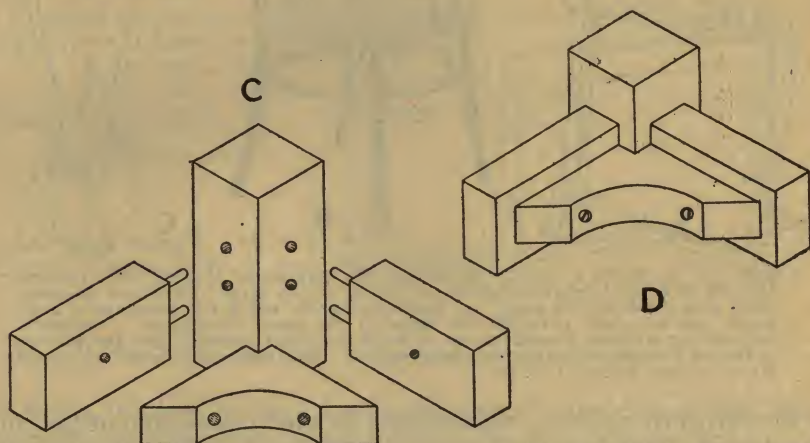


FIGURE 20a.—C shows how a chair post is joined to the chair rails. Central figure is the chair leg; beneath it is a corner block; at either side are the rails with holes bored in them, as well as in the leg, to hold the dowels. The holes in the corner block are for screws. D shows how the joint looks when assembled. The pieces fit snugly and are braced to prevent pulling apart, the corner block augmenting the dowel joint

Mortise and Tenon.

The tenon joint (see fig. 20D) is strong and well favored. It may be illustrated by the human hand. If the knuckle of the middle finger of the right hand is placed between the knuckles of the third and fourth fingers of the left hand, a figure equivalent to a tenon joint will have been formed. If the knuckles were wood instead of

flesh and bone, they would hold as securely as desired, when well glued.

A mortise and tenon joint, by which chair rungs or stretchers and other portions are joined to leg posts, may be compared to a candle inserted in a candlestick or in a doughnut hole. Naturally, the wood is far more rigid than wax or tallow would be and when glued into the hole, it holds tenaciously. If the rung goes part way through, it is called a blind or closed mortise and tenon; if it goes clear through it is the through or common mortise and tenon.

Dowels.

The dowel joint is employed for most of the finest furniture made to-day. A dowel is a wooden peg or pin of well-seasoned hardwood. Holes to fit the dowel are bored in the pieces of wood to be joined, the holes are swabbed with glue, after which the dowel is pressed into the sockets.

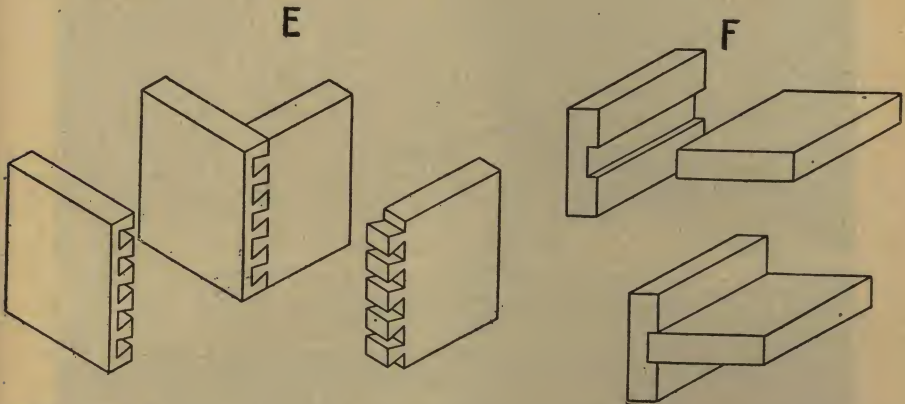


FIGURE 20b.—E shows a dovetail of the "half-blind" type. The joint is very strong, and dovetail joints should be sought at the back as well as the front ends of drawers. F shows the dado joint—the method by which shelves are fitted into the sides of cabinets

One of the most common uses for the dowel is to join the rails and legs or posts of chairs. With perfect fit and good glue, a rigid joint results. The dowel strengthens the two pieces of wood at a needed point. It is essential that dowels be made of thoroughly-seasoned woods; otherwise, they will shrink and cause a loosening of the joints.

There are steel dowels, screws, and wooden dowels.² Steel dowels are little more than thick nails and are to be avoided. Screws are better but not entirely satisfactory. Wooden dowels are best, particularly when they are cylindrical instead of square-edged, and when they have been grooved spirally and longitudinally to provide an escape for air bubbles which may result when the glue-coated dowel is inserted into the dowel hole.

Two dowels customarily hold each rail to the post, making four dowels in each joint. While dowel construction is and should be a

² See Manual of the Furniture Arts and Crafts (A. P. Johnson, Grand Rapids, Mich., publisher), ch. 4, p. 442, Furniture and Construction.

talking point in the appraisal of furniture, the number of dowels, their size, type, and position in the furniture, determine their true value. It is possible by poor placement of the holes bored to receive the dowels, to weaken the leg or post so as nearly to cut it in two.

Most dowels are 2 inches long and seven-sixteenths of an inch in diameter; however, in heavy, massive framework, much larger dowels are required, and in small, delicate furniture, tiny ones are more suitable.

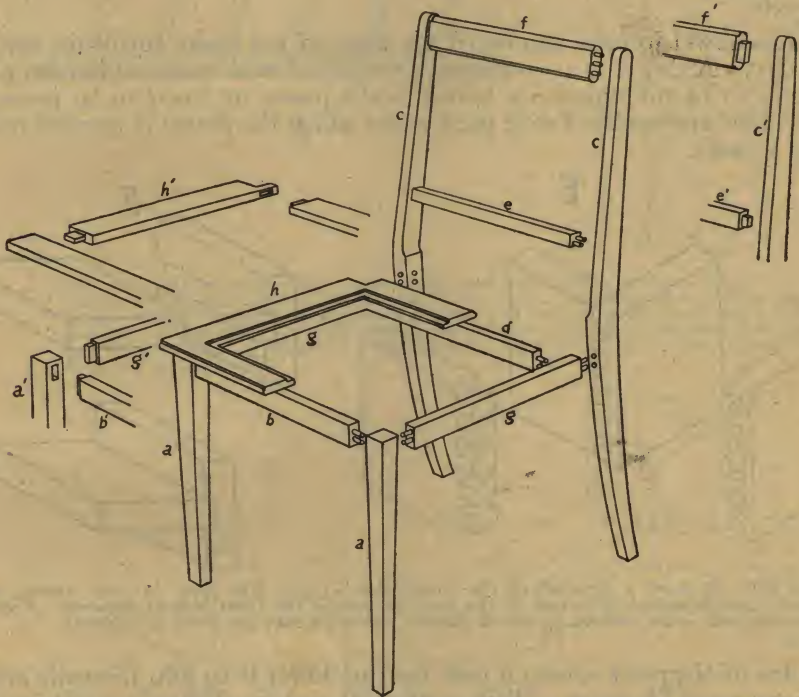


FIGURE 21.—This diagram shows alternate methods of chair-joint construction. The central illustration shows a chair in which dowel joints, reinforced with glue, have been used throughout. The alternate style at the sides shows the use of mortise and tenon joints; *a*, *a*, and *a'* are the front posts; *b* and *b'* are the front rails; *c* and *c'* are the back posts; *d* is the back rail; *e* and *e'* are the center back rails; *f* and *f'* are the back top rails; *g* and *g'* are the side rails; *h* and *h'* are the seat frame rails. Corners should be augmented by corner blocks. Diagram adapted from "Das Gestalten der Tischler-Arbeiten"—Berlin—A. Blunck

Corner Blocks.

Corner blocks are used to reinforce dowel, mortise, or tenon joints in all good furniture. (See figs. 20*B* and *C*.) These are triangular blocks of wood, screwed to the rails, and perhaps notched to fit the leg of the furniture. Corner blocks prevent the dowels from cracking off under pressure. The grain of the wood in corner blocks should run diagonally to that in the rails, thus affording additional bracing against strains. In most types of furniture, absence of corner blocks is a sure indication of inferior construction. However, in certain types, such as bentwood legs socketed into the rim of a chair seat, they would be impracticable.

Tables.

Legs and stretchers of tables are assembled in much the same manner as those of chairs, but table-top making is a different process.

Glue is an important item in the joining of flat surfaces. The discussion of veneer and plywood describes how some table tops are put together. Where no weight is to be borne, a plain glue or rub joint is common and satisfactory.



FIGURE 22.—This picture shows a table in a furniture factory, before the leg posts are joined to it. Note that a corner block similar to that used in chairs will reinforce the corner structure

Naturally, the wood going into a table top of this type has a surface of beautiful veneer with a cross-banding for additional strength.

Inasmuch as the end surface of any panel of wood does not have the smooth beauty of the top, the edges are bound with an edging strip of solid wood or veneers. The specification of furniture for

United States Army officers' quarters calls for a solid strip not less than $1\frac{1}{2}$ inches in width, to give the completed top a uniform and attractive appearance.

In solid and plywood tops, the single panels or boards are joined to the rails and the leg posts with screws, dowels, or steel clips. Glue, as a rule, is not used, thus permitting the swelling of the broad panels without splitting the base. Extreme care should be exercised in inspecting the edges of the solid top to see that they are smooth and even. An edging strip is often placed around the solid top to give the appearance described in the preceding paragraph.

Drawers.

A great deal is evident to the experienced furniture buyer when he looks at the drawers in a piece of furniture. The joints will disclose highly important facts in regard to quality of the construction.

Pull out the drawer; has dovetail construction been used? Very likely there will be dovetails at the sides of the front panel. (See fig. 20E. But wait! Look at the back of the drawer. In a number of cases it will be found that the back has simply been slipped into a slot or groove to receive it. Best construction in a drawer will have dovetailing at both front and back.

Look at the bottom of the drawer. Is it substantial? Ordinary furniture, of course, will not stand this test; but if one is buying an expensive piece of furniture, it should be possible to rest one's weight on the inverted drawer. The strength of this part of the furniture will be in direct proportion to the amount the purchaser is willing to expend for it. A good drawer bottom is a quarter of an inch thick and may be composed of 3-ply laminated construction, the exposed surface within the drawer being of a good quality face veneer. Solid wood is sometimes used, and either type is satisfactory. Probably the bottom has been slipped into a groove in the sides of the drawer, and when the dovetails have been completed, the bottom is locked tightly into place. A tiny block or two of wood glued to the sides will prevent the bottom as well as the sides from getting out of position.

Does the drawer slide easily? All drawers should have center or side drawer slides on the under side. Center slides should be securely fastened to front and back cross rails and glued to the bottom of the drawer. The groove rail upon which the drawer glides forward or backward should be fastened to both the front and the back of the drawer. Every care should be taken that the bottom stays in line and that the movement will be smooth so that the drawer will not stick from expansion. Proper seasoning will eliminate sticking drawers.

Between drawers there should be a panel at least three-sixteenths of an inch thick to prevent dust from getting into the drawers. The purchaser should pull out the drawers to see if there is such dust proof construction in the furniture being considered. This is not so important in tables as it is in dining room or bedroom furniture.

Backs of Cabinets.

In chests, cabinets, and similar furniture of good quality, the sides and backs are of good rather than of cheap wood, and are fin-

ished with evident care. The customer should inspect the back of every piece of furniture to see whether it is nailed, screwed, or grooved into the sides, remembering that one is not likely to see many nail heads in furniture of really good grade.

Other evidences of inferior construction are: Dry glue smeared about a joint, or, a sunken joint where the glue has fallen out. It is likely that the furniture will not hold together firmly for a very long period of time if such faults are visible within a few months after manufacture.

Rungs.

What is the purpose of the stretcher or rung between the legs of a chair? Primarily, it is to serve as a brace. Engineering practice, as in bridge construction, for instance, would be to employ a wire which could be tightened by turn buckles to take up slack. Naturally, this would detract from the appearance of artistic furniture. If wooden braces were used diagonally, the purpose also would be served, but the architectural design would not blend with that of the chair.

The stretcher should give added support to the furniture and prevent it from becoming rickety, loose, and unsafe. The person who sits in a chair usually leans backward and pushes with the feet, which has a tendency to cause the chair to collapse and also to squeak.

The average stretcher is built on the principle of the spoke in a wheel. A small joint can not support a great deal, but a leg an inch and a quarter in diameter with a stretcher half an inch thick may support about 25 pounds when the stretcher is socketed three-quarters of an inch into the post. The more rungs or stretchers used, therefore, the stronger the furniture will be.

Too many rungs would spoil the appearance of any piece of furniture, and in some period designs no stretchers are used. The Duncan Phyfe, Sheraton, and cabriole type of a chair leg preclude the use of such bracing. In these styles, the customer should be particularly careful in examining the corner structure to make sure that it is sturdy enough to withstand the treatment to which it will be subjected in the home.

Some furniture manufacturers obtain rigidity and subtract squeaks by adding stay braces in the hidden parts under chairs and beds. These may be tightened by turnbuckle at will, and the ugly, inartistic lines are hidden by the chair seat or bed spring. If a good rail lock is used in the construction of beds, so that any play is taken up automatically, a turnbuckle wire bracing is unnecessary. The strength is not so great as it would be if employed in the center of the lower parts, but it adds greatly to the stability. In general, it may be stated that in the very best furniture the stretchers should be carefully centered in the posts or legs.

Inlay and Marquetry.

Inlay is a design in the surface of wood formed by inserting woods, ivory, or other materials of contrasting color. Segments of figured woods, usually forming a marked and pleasing contrast to the body wood, are set in tiny grooves or channels cut to receive them. Borders, ornamental patterns, medallions, flowers in baskets, and any number of decorative effects are secured through inlay.

Marquetry is a name given to an entire surface of inlaid work when colored pieces of wood, ivory, shells, etc., of several colors are fitted into surfaces forming an artistic design. The design is often fitted into a pattern in thin wood veneer, which is then glued to the furniture. Intarsia differs from marquetry in that the design is sunk into solid wood. Intarsia is a type of decoration formed by scrolls, pastoral scenes, fruits, and flowers, much used in fifteenth century Italy. Usually a much darker wood is used as a background into which vari-colored segments are laid.

When a variation of color is required in a wood segment, hot sand is sometimes applied to shade it to the required darker tone.

Onlay or overlay is a section of wood glued to the top of a panel, and may be carved or multi-colored. It is the reverse of inlay.

It is possible to imitate inlay by painting patterns or thin lines on furniture in contrasting tones. A thin black line, for instance, may be used to give the appearance of ebony; an amber, yellow line may appear to be satinwood. Lithographed transfers are also used to simulate marquetry. These practices often give a distinctive effect but should be properly acknowledged by the merchant. Close scrutiny and careful feeling of the decorated portion with the finger tip should reveal to the layman whether actual woods or decoration with a brush have been employed.

Hand and Machine Work.

One of the things least understood by the furniture consumer today is the reason for handwork on the part of early craftsmen. Furniture-making machines were not used until the time of our great-grandfathers. It should be evident that ingenious, modern machines, set to cut with a precision of a thousandth part of an inch, are better equipped to do accurate detail work than the human hand, however cunning it may be.

It is equally true that life, character, and vigor are not easily obtained by machine work and consequently, in the better grades of factory-made furniture, skilled craftsmen put on the finishing touches by hand whenever handwork adds to the value of the piece.

Handmade furniture built without the aid of machinery would be an obvious impracticability in our modern age. It should be equally evident that a band or circular saw in a factory which cuts with the guiding hand of a man who knows how and where to cut, to say the least, is as efficient as a handsaw in the hand of a cabinet-maker. Joints must fit as tightly as it is possible to make them. A machine can do this work far better and more economically than hand tools.

Unfortunately, hand carvers are few and far between. There is good hand carving and poor hand carving; the very phrase "hand carved" is no proof at all of good workmanship, for a well-executed machine carving is superior to poorly hand-carved work. Skilled carvers are highly paid specialists and in the more efficient furniture factories their best work is often devoted to elaborating details on carving "shaped" by machinery. The same procedure is followed in other lines of industrial endeavor where artistry is a factor. For instance, most of the so-called handmade silverware is roughly shaped on machines, whereupon it is turned over to the skilled silverworker, who finishes it by hand and gives it its character.

The rough carving of furniture parts is effected in a similar manner and the valuable time of the skilled wood carver is concentrated on the finishing process.

Since carving is one of the noblest decorations ever evolved for furniture, and since both the human worker and the machine can cooperate to produce it—in addition to speeding up production and minimizing the cost of labor—it would appear that to all practical purposes, the combination of man and machinery is a satisfactory and economically sound partnership.

Although mass production is deserving of defense in this direction, it should be remembered that wood compounds are sometimes used in place of carving. When stained or treated with gold leaf, paint, or other pigment, these have the outward appearance of wood. However, the top pigmented surface dries and chips off quite easily, revealing the plaster-like composition beneath. Compounds are also to



FIGURE 23.—Machines work with precision which the human hand usually finds impossible to duplicate

be detected by the fact that they are molded into shape, perfect in contour, and perfectly smooth. Such decorations are apt not to remain glued to their surfaces, to become loose, and to fall off. Although satisfactory for impermanent purposes, they are not desirable for furniture destined to be used over a long period of years. The consumer purchasing this style of decoration should have a clear understanding as to the type of decoration chosen. The expert eye will always detect this class of work.

Carved portions, glued or otherwise affixed to furniture rather than carved from it, are often seen. There is obviously a considerable difference in the cost and value of solid carving and glued-on carving. The consumer should know which type of decoration has been employed.

Moldings on inferior furniture usually are very poorly sanded, and one of the quickest ways to determine the grade of the piece is to

inspect the molding, and run the finger over it to find rough, slivery places.

Mirrors.

Mirrors are a requirement in most homes in many rooms. When a guest comes in from the outdoors, she (and even he) likes to look in the glass to see that no soot has become a part of the complexion, and that the hair is in fairly orderly condition.

Some mirrors are fastened to bureaus, vanities, and toilet tables, although the contemporary style tendency is to employ the mirrors separately, hanging them to the wall. In purchasing a chest with mirror attached, it is important for the buyer to notice the manner in which it is secured. It should be braced firmly by screwing the support to the frame, rather than by simply doweling it to the top.



FIGURE 24.—Handwork is necessary in assembling pieces, and give a vitality and character to work which was started on machines

Mirrors form an integral and interesting part of many pieces of furniture and no longer is it necessary for the householder to select a piece of furniture to learn later to his disappointment that the mirror which it contains is marred by numerous bubbles and other unsightly defects. Through the activities of the Mirror Manufacturers Association, in cooperation with the National Bureau of Standards, five distinct grades of quality have been decided upon which have been accepted as the basis of daily trade by practically all the mirror manufacturers and many of the distributors and larger consumers.

For the guidance of the buying public and the protection of the mirror manufacturer, each commercial standard grade mirror may be labeled in a distinguishing color for each particular grade. However, inasmuch as the use of the labels is not compulsory, it may be necessary for the purchaser of furniture to ascertain the

quality of a mirror in question from the concern with which he is dealing. In many cases it is possible that the mirror will be stamped on the back according to the grade in which it falls; but inasmuch as this marking is covered over by a piece of veneer or other backing, it is necessary for the purchaser to rely upon the integrity of the salesman.

The commercial standard grades of mirrors are designated in a descending quality scale, as follows: "AA," "A," No. 1, No. 2, and No. 3, which may be accompanied with labels in the following respective colors: White, red, blue, green, and yellow.

The "AA" quality represents the superlative in mirror production. Mirrors of this quality are entirely free from major defects and as nearly perfect as it is possible to manufacture them.

The "A" quality mirrors come as a close second, allowing no major defects in their central area, but they may contain a few well-scattered bubbles, which are known in the industry as "seed" and other very minor defects. These two grades represent the very finest in the art of mirror manufacture, and, because of their high perfection, they constitute only a small part of the total volume of mirrors produced.

No. 1 quality mirrors are high-class products which contain, in limited number, certain defects which are inherent in practically all plate glass from which mirrors are made. This quality of mirror will adequately suit the needs of most homes.

The mirrors designated as No. 2 quality contain more frequent defects and those more readily seen, such as occasional coarse seed, light wavy lines, known as strings, and under certain conditions, a wavy defect known as "bull's-eye." This type of mirror is entirely serviceable and the sort that is naturally found in much of the popular priced furniture.

Mirrors of No. 3 quality may contain all of the defects which are naturally found in plate glass and must, therefore, be bought only after careful examination to see that they will fulfill the service expected of them.

Inasmuch as these standards³ have only recently been established by the mirror industry, it is probable that they will not be in general use until the factories have been able and encouraged to put the new schedule into effect. The effectiveness of these standards can be enhanced and the time of their complete observance hastened by the furniture purchaser asking to see labels of the mirror manufacturer guaranteeing the quality of the mirror in the piece of furniture which he is purchasing.

The silvering of all commercial standard quality mirrors is guaranteed for a period of one year from the date of manufacture by the manufacturers of such mirrors, unless exposed to unusual conditions, such as open weather, moist walls, steamy rooms, and direct sunlight.

Although the mirror with beveled edges is more costly because of the additional work involved in this process, the reflecting properties are no greater than in mirrors of plain surface. However, many persons prefer this sort of border around the looking-glass as more ornamental and select it despite the extra cost.

³ See Commercial Standard CS-27-30, Plate Glass Mirrors, prepared by the Bureau of Standards, Department of Commerce, obtainable through the Superintendent of Documents, Washington, D. C.

Chapter 9.—FINISH

AUTHORITIES on decoration are united in the belief that the ideal finish for most furniture is a lustrous, eggshell semigloss rubbed to a warm glow. A few Georgian and Louis XV styles require a clear, deep, transparent finish; but this differs vastly from the glassy, "shiny-eye," polish to be seen on much cheap furniture which is given a muddy stain and glossed over with garish finishes of a type offensive to good taste. The natural beauty of the wood is in many cases the most vital essential to finished beauty, and so this natural beauty should be preserved at all cost.

After proper processes of preparation—sponging and sanding—there are three finishing steps through which most furniture goes: Staining, filling, and the final finish with oil, wax, oil varnish, spirit varnish, or lacquer. The preliminary processes are at least as important as the final step.

Sponging, sandpapering, and dusting remove small, depressed, loose fibers and core matter in the pores of the wood. They also bring out the figure. Naturally, a piece of furniture costing \$25 receives less attention than one costing ten times that amount, but elementary practices remain much the same in costly or inexpensive work.

Staining brings out the color and natural beauty of the wood. The stain should not be so dark as to give a muddy surface. Modern science has produced transparent stains which are permanent and available in any shade desired. The lovely, inherent qualities of the wood are enhanced, and it is possible to modify effects whenever this seems desirable.

Filling in the pores with a silica wood-filler prevents them from becoming clogged with dust, which would soon dull the surface given in the finishing room. The filling process in gum, walnut, and mahogany differs from the dark, mellow, "open pore" finish sometimes given oak. Open-pore finishes are not very popular to-day, owing to the fact that dust gets into the grain and gives the wood a grayish cast.

The application of stain often is an indication of the quality of furniture. Careless unevenness of tone not caused by a high-lighting decorative practice is evidence of slovenly, hurried workmanship. Whether the stain is applied with brush, rag, sponge, or spray, close examination may reveal the quality of workmanship. Inasmuch as quality is not available without cost, and the price runs up in good materials and labor, well-finished furniture will naturally cost more than slipshod, hastily finished pieces.

Any of the common finishes may cover a multitude of sins. It is highly important, therefore, that the surface wood be in proper condition to receive them.

Each of the finishes named above is a good finish if properly applied, properly dried between coats, and properly polished.

How can one tell whether the furniture is properly finished? Here are simple tests: Examine each piece you propose to buy to see whether the coating is smooth and free from rough spots. Scratch with the finger nail a small section in an unexposed area to determine whether the finish is brittle; if finished with cheap, inferior coatings it may scratch easily, leaving a white mark due to the brittleness of the film. Rub a section with the thumb rapidly for several seconds



FIGURE 25.—Artists may paint furniture when completely assembled, or may paint panels which are then placed in the proper position in the individual piece. The latter process is shown in this illustration

until the coating becomes warm; if finished with inferior materials, the coating may powder or become sticky.

Among the materials used for finishing furniture are oil varnish, lacquer, spirit varnish, wax, and oil. Of these finishes, varnish and lacquer are usually somewhat more resistant to the effects of hot water than the other types of finish. Wax is often used as the final finishing coat upon furniture which is either lacquered or var-

nished, and is often applied by the householder for rubbing down furniture. For this purpose a wax rub is widely used.

Woods treated with gilt and with enamel such as those found in various pieces of Louis XIV, Louis XV, and Louis XVI, as well as in Hepplewhite and Adam style, do not come under the same category as the woods which are stained, filled, and finished, and which are discussed above. Such treatment is specialized, and since they make no claim to simulate woods' natural beauties, the artificial surfaces formed blend with surrounding details in room appointments, are perfectly legitimate, and permit of attractive, flexible treatment.

Much furniture carries painted designs and motifs in conventionalized, formal, balanced patterns. Floral decorations—tiny rosebuds on French furniture and beautiful classic panels of the late eighteenth century in England—are brought into being by artists who work with palette and brush. Exquisite workmanship costs money but the result is worth the effort to the connoisseur of good furniture. It is almost unnecessary to add that poor hand decoration is inferior to good mechanical reproduction.

Some furniture is decorated with decalcomanias and stencils. In these some are good and some are bad. Special care should be taken to avoid the cheap and obvious transfers which appear to have been slapped on in 20 seconds by a workman hurrying to keep up his speed in piecework. The better decalcomanias and transfers resemble hand painting, but good artistry is always preferable. The purchaser will be repaid for scrutinizing any applied decoration very carefully.

Finally, it is well to look at the unexposed portions you can find to see if they are finished. The finishing of both sides of a board, particularly a solid board, reduces the tendency to warp. The powder-post or Lyctus beetle delights on a diet of certain woods which allow him free entry. When pores are filled with substances such as paraffin wax, varnish, linseed oil, or similar fillers, they are effectively closed. The bottoms of many pieces, as well as the sides and bottoms of drawers, are sometimes left unfinished. Powder-post beetles exist all over the world, but if proper care is exercised, the purchaser can avoid having them dine on his furniture.

Chapter 10.—UPHOLSTERED FURNITURE

THE ADAGE that beauty is skin deep applies to upholstered furniture in that the fabric covering's texture and color can be a distinct decorative asset. Deep under the surface, however, comfort and durability are built, and these concealed features determine the ultimate satisfaction the consumer derives from the furniture.

In our forefathers' time, a cabinetmaker built the frame and an upholsterer completed the work to order. The consumer could see his furniture at any time during its construction; consequently, he knew what went into it. To-day it is possible for two overstuffed chairs, identical in design and covering, to differ in cost by \$100, owing to the difference in quality of inside materials and workmanship. It becomes evident, therefore, that the purchaser should know something of the reliability and integrity of both the maker and retailer of the upholstered furniture he is considering, since so much depends on their good faith.

Frames.

Frames of upholstered furniture usually are made of wood, and it is well for the purchaser to know what kind of wood is used.

Ash, birch, hard maple, and a few other woods are especially suited to this purpose. They are strong, hard, and wear well; they hold their place after fabrication with a minimum of warp and twist; they take and hold glue well; they receive finish with amazing efficiency. These excellent woods often become "mahogany" and "walnut" under treatment, which is advantageous and legitimate so long as the purchaser knows just what wood he is getting.

Maple has excellent wearing qualities; and where warping and twisting have been guarded against, it is considered one of our best woods. Soft maple is not quite so desirable but is acceptable. It works easily, and imperfections such as pith flecks in the wood do not constitute a serious structural defect.

Gum is favored by many fabricators inasmuch as it is easily worked, fabricates well, holds glue well, is abundant and readily available, and therefore is comparatively inexpensive. Care must be exercised in using gum, however, to avoid the possibility of splitting.

Soft or white elm is reasonably strong and shows less tendency to warp or twist than rock elm, which is stronger and heavier. The surfaces reveal an attractive, wavy pattern that takes finish well.

Pecan and hickory are very acceptable, but they are not widely used because they are exceptionally hard and hence difficult to fabricate. Their outstanding properties are strength and wearing quality.

Pine and yellow poplar are sometimes used and are less costly than the woods named above. Pine is somewhat susceptible to changes in room temperature and humidity.

In all furniture, upholstered or not, frames should be well glued, doweled, tenoned, and corner-blocked, not nailed together. The quality of the frame, of course, contributes to the durability of the furniture. Since the manufacture of upholstered pieces is mostly handwork, volume can not reduce production costs to the same extent as in dining room furniture, for example. Slighted details, however, can lower the price; and if the purchaser does not pay for thorough workmanship at the beginning, he will find the difference in the discomfort and deterioration of the piece not long after buying it.

Three different types of materials may be used as the base for springs in upholstered furniture. There is textile webbing; there is tempered steel webbing, either in the form of flat strips or of wire; and there is the foundation of wooden slats.

Stoutly-made textile webbing may be used as a support for the springs or stuffing in the arms and back as well as the seat of upholstered pieces. The webbing is interlaced, the strips front to back alternately weaving over and under strips stretched from side to side. The webbing has a certain amount of resiliency. If the webbing bags when springs are depressed, it will permit the use of a deep spring, upon which depends a great deal of the resiliency.

Tempered steel webbing provides a base which has resiliency and does not stretch; it may be compared to the common types of bed spring. Cone-shaped coil springs are usually used in connection with the steel or wire base.

In early days wooden slats as a base for springs of upholstered pieces were condemned because they were of necessity placed higher than webbing bases, thus permitting the use of shallower, less expensive springs. By lowering the front and back rails of chairs and sofas, and constructing a special framework, it has been found possible to employ substantially the same type of spring—the double cone-shaped coil—as is always used on the textile webbing base.

Manufacturers of wood and steel bases point out that these types are more durable than the fabric webbing, while the makers of the latter type declare their type of construction ensures greater comfort. In all three types, much depends upon the materials and methods used; the webbing must be strong, and there must be a sufficient amount of it to provide satisfaction. The steel strip, wire, and wooden slat bases must likewise be strong and placed so that the largest possible spring depth can be obtained.

The size of the barrel in the coil spring, and the number of turns to the height of the spring, are highly important in obtaining resiliency, the prerequisite for comfort.

Springs.

High-tempered steel wire, enameled to prevent corrosion, is used for the coiled springs, which vary in size according to their use. Deep springs are used in the seat, shallow ones at the edges of the seat; tiny springs are used in the arms, and medium-sized ones in the back. Upon them and the way they are fastened together depends much of the resiliency, comfort, and lasting qualities of the furniture.

The coiled springs are fastened firmly to the webbing in such a manner as to preclude slipping out of position. These springs are tied at the top with strong hemp twine, which is knotted at the

spring and fastened to the front and back of the frame. Other twines are knotted and tied from side to side; and if it is really finely constructed furniture, four additional knots will strengthen it still further, the strings being strung "kitty-corner" from front and

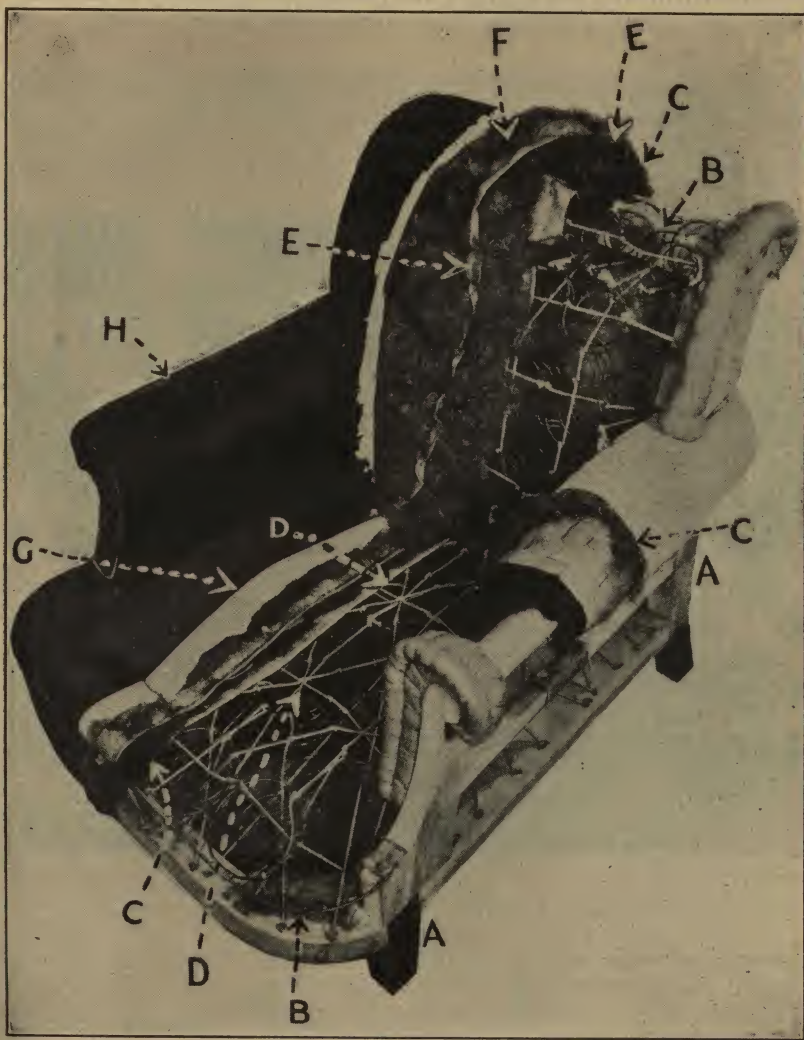


FIGURE 26.—Construction of an upholstered chair. A, framework of wood; B, textile fabric base; C, curled hair stuffing; D, tempered steel wire springs tied with eight stout twines (known as 8-knot tie); E, additional layer of fabric to keep stuffing in place; F, additional layer of curled hair sewed to fabric; G, layer of cotton covering stuffing; H, outer upholstering cover material

back to the diagonal sides. This holds the springs in place so that they resume normal position when not subjected to seating pressure. The tying is important, for if knots are too tight they cause discomfort while if too loose the springs will soon sag and the piece will be headed for the repair shop.

Over the springs is placed a layer of burlap or heavy cotton fabric, and in better furniture this is sewed to the springs. When no springs are used in the arms, burlap and canvas are laid over the webbing and the next layer, stuffing, goes on top of this. In some fine furniture, the springs are pocketed separately in muslin or burlap to prevent spreading and to eliminate spring noise.

Types of Stuffing.

Stuffing is set over the fabric-topped springs, being smoothly worked into a compact mass. Over this, additional protection is placed and stitches are taken through the stuffing from bottom to top to prevent shifting. A layer of white cotton felt is placed



FIGURE 27.—This shows a view of an upholstery factory and illustrates the point that since most of the construction is handwork, much depends upon the character of workmanship, as well as the quality of the hidden materials

immediately underneath the outer covering of all upholstered pieces in which curled hair or moss is used.

The following materials are used as stuffing: Long, curled hair (horse hair is preferred to pig hair); short hair, or hair and moss; down; kapok; African palm fiber; Spanish moss; tow; cotton; and excelsior. The first named are most expensive. Moss and tow are quite widely used. In some execrably-made furniture, wherein quality is sacrificed to the great god Price, one may even find a stuffing of old paper!

It would be wise to examine the upholstered furniture and the mattress one contemplates purchasing for assurance that new stuffing has been used. Each year thousands of old mattresses are dissected and their stuffing finds its way into supposedly new furniture and

mattresses. A number of States require labeling of bedding and other materials but despite regulatory action, violations persist in many sections of the country. When the stuffing of old cotton mattresses is put through a refelting machine, it is sometimes impossible to tell whether the felt was made from old or new cotton. Occasionally a strong odor accompanies the old stuffing.

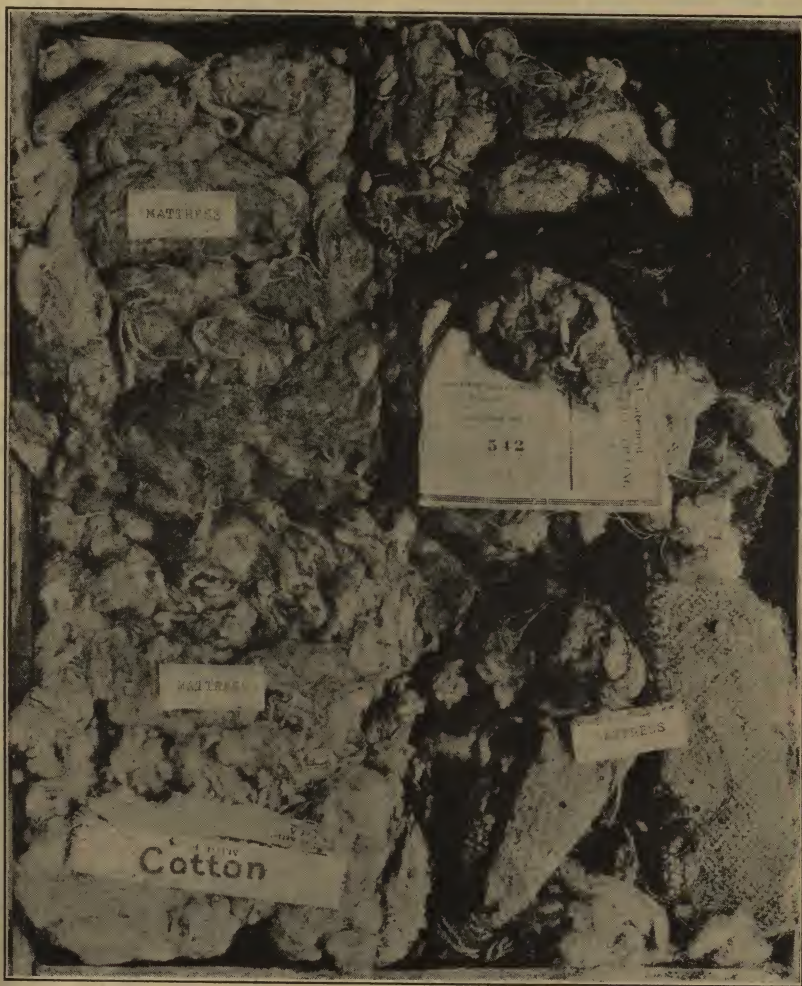


FIGURE 28.—This stuffing was exhibited by the Pennsylvania Department of Labor and Industry at Harrisburg. Bedding and upholstery stuffed with various materials included clothing (not even shredded, and with buttons still attached); carpet shoddy; dirt, dust, and Chinamen's queues. It was labeled "New cotton"

The customer should be sure of receiving new materials—if he is paying for them; look for the State label or guarantee. Various bodies, such as the Pennsylvania Department of Labor and the national and local better business bureaus are crusading against unsanitary stuffing materials, and point out that some of the material used is not even fumigated before it is inserted into the ticking

or upholstery covering. Also, the National Cotton Fibers Association has designated a seal (see fig. 29) which is used by many makers and distributors as a guarantee of new stuffing.

The following paragraphs describe the properties, advantages, and disadvantages of the various stuffing materials:

Curled hair is literally what the name implies—principally hair from the manes and tails of horses, which has been sterilized, tightly twisted into a rope, steamed, and dried. When the rope is unraveled, each individual hair has been given a curl; and when used in mass these multiple curls produce a resiliency that is peculiar to hair, maintaining its elasticity as upholstery filling for a considerable period of use.

Cattle hair is being used to a considerable extent to-day because the supply of horse hair has been reduced. A large amount of horse hair is mixed with cattle hair and sometimes with hog hair. In general white hog hair should be avoided because it is short, bristly, and will not curl so that it becomes resilient.

Most curled hair is dyed black during the process of manufacture. The dye used is itself a sterilizing agent, penetrating the inner tubes and sealing up any animal matter which might cause trouble if this process were omitted. Dyeing also tends to stiffen the hair, making it more wiry.

Much hair used to-day comes from old automobile seats. Inasmuch as this was the cheapest kind of hair when used originally, wise buyers prefer new materials.



FIGURE 29.—Manufacturers who place this seal on their mattresses guarantee that all the cotton used in their products is new material

Moss is a vegetable growth found in certain parts of the South, where it grows very rapidly. In its growing state, it has a grayish green color and is fuzzy. After being cut down from the trees over which it grows, the outer case is rotted away, leaving a fine hairlike core which resembles curled hair. It can be distinguished from hair upon examination

because it has slight expansions or short, branching fibers at regular intervals of about 2 inches.

African fiber and *Palmetto fiber* are two names given to a fiber of shredded palm leaves which are twisted into a rope and then uncoiled, leaving the original fiber in curls which produce a resilient material for upholstery fillings.

Coir fiber, sometimes called coir hair, is the shredded individual fiber of the husk of the coconut. It is treated in the same way as the palm fiber but it is inferior as a stuffing material.

Kapok is a soft, silky fiber, very resilient in the mass, which incloses the seeds in the fruit of the bombax tree, principally on the island of Java.

Tow is the crushed stems and fibers of flax straw which is grown in North Central States and in Canada. There are various stages of refinement in the production of commercial tow from the very coarse, straw-like stage to the fine, hair-like fibers from which linen thread is produced. As a stuffing material, it is less expensive than either curled hair or moss. The voracious tow bug often infests tow-stuffed furniture.

Cotton, when used for stuffing, may be either regular cotton fibers such as those used for spinning and weaving, or "linters" which are

the very short fibers obtained from the seeds by further processes of ginning. Of course, the regular cotton is more satisfactory in that it offers greater resiliency and freedom from matting.

Excelsior is thin curled shreds or strands of wood made by knives, spurs, or fine steel teeth against a short bolt of wood. The spurs slit the wood and the knife pares it off. *Excelsior* sometimes is used as stuffing in cheap furniture. The finest grades are sold as "wood wool."

Down is the soft, fluffy plumage next to the skin of birds and fowls. It is generally completely hidden by the outside feathers. Down makes an excellent stuffing material for upholstered furniture, including pillows and cushions, owing to its lightness, softness, elasticity, and freedom from matting. Because of its relatively high cost, down is used only in the highest grades of furniture.

Feathers are usually used in conjunction with down, because a heavier consistency is needed to give body to the stuffing. Breast feathers of geese are used in the best furniture, chicken feathers in cheaper pieces. Chicken feathers will not wear so well as goose feathers.

Placement of Stuffing.

If "double-stuffed," the burlap over the first layer is covered with more stuffing, over which fabric protectors are again placed, and the stuffing again is sewed through and through. A wadding of pure cotton is placed over all to insure comfort and relaxation and to prevent the stuffing from coming through.

The smaller springs in the arms are likewise covered with stuffing; and each spring is sometimes protected and held in place by a muslin or burlap bag, and over all, cotton is again placed. The back receives the same treatment.

The covering is then slipped over the inner construction. Cambric is often fastened under the seat to prevent dust or parts of the stuffing from falling through and to hide the tacking and loose ends of covering.

Much furniture to-day has loose cushions atop the spring-filled, stuffed seat. Down is a favored filling for these cushions, being sewed in several partitions to prevent it from becoming lumped. In other furniture, cotton is felted and padded into cushion size. Sensitive coil springs encased in muslin or burlap pockets are inserted between the layers, and the cushion is compressed into the envelope of fabric which is to be its covering.

Trimnings—gimp, fringe, and edging—are applied by alert and expert craftsmen, and the covering is hand tailored to fit each peculiarity of the particular piece of furniture. Blasts of compressed air remove all dust and lint, and dry steam sprayed through a nozzle removes marks and creases and also freshens the fabric.

Careful inspection should be given each piece of work in the upholstering to guard against imperfections, and moth invasion should be stopped as far as possible by chemical treatment. In furniture which sells far below the usual price range, these important processes are apt to be overlooked; and the materials and workmanship, you may be sure, are inferior. The attractive cover can hide a multitude of defects.

Many persons do not realize that they can secure varying patterns and colorings in upholstering fabrics from many dealers. When one approves a design but dislikes the covering of a sofa or chair, the dealer is often able to show samples of materials from which to make a more satisfactory choice. This is especially helpful to the home maker who is seeking a color scheme of matching or contrasting hues.

Textile Coverings.

Decoratively, the coverings used for upholstered furniture are mainly concerned with color and patterns but economically, texture and fabric construction are equally important. For utility and durability, materials and weave are the most important considerations.

Fortunately, color can be obtained in almost any shade or hue in nearly all textiles, be they inexpensive or costly. However, color, design, and fineness of texture do not in themselves guarantee length of wear. Usually the coarser fabrics, if made of first quality fiber, will give excellent service. Price is not always the determining factor in durability.

The home maker wants a fabric calculated to hold up well under ordinary usage, and to add charm and beauty to the furniture as well as to the room. She wants it soft enough to be pleasant to the touch; it must never be brittle or scratchy. In addition, it must be easy to clean.

- Animal and vegetable fibers in the form of thread and yarn are the raw materials from which all textiles are made. The silks, wool (sheep's hair), mohair (the hair of the Angora goat), horsehair (chiefly from the tail and mane), and in limited quantities, the hair of cattle, hogs, camels, and rabbits, are the animal fibers. The vegetable fibers include cotton, rayon, flax, hemp, jute, ramie, kapok, palm fibers, moss, and coir.

THE ANIMAL FIBERS.—Silk.—True silk is produced by the mulberry worm of China. "Wild" silks are produced by other worms feeding upon leaves other than mulberry. The fiber is coarser than that of true silk, and so difficult to dye effectively that fabrics woven from it are usually left in the natural yellow-brown color.

Wool.—Because there are many varieties of sheep, the yield of wool varies greatly in fineness, length of staple, strength, resilience, and spinning quality. As a result, they are sorted or blended before spinning, to suit the requirements of the fabric to be woven.

Worsted yarns are made from relatively long staple wool fibers, combed and spun into what is known as the "worsted system." The fibers are laid evenly and more smoothly than the yarns prepared for the woolen system.

Woolen yarns employ relatively shorter staple fibers, and are spun under a different system than worsted. As a result, the fibers protrude at all angles from the core of the yarn.

Each type of yarn has specialized uses, and excellent fabrics may be produced from each.

Mohair is the fine lustrous hair of the Angora goat, originally found in Asiatic Turkey near Angora, the present capital of Turkey. It is harder to spin than wool because the hair scales are not so fully developed. Mohair is woven into some of the best wearing upholster-

ing fabrics. There are wide differences in them, based upon the quality of wool, the number of points per square inch, and the height of pile. A large amount of upholstering material is woven from blended mohair and wool, and mohair and cotton. Frequently this is sold dishonestly as "all mohair."

Horsehair is used as a thread, without spinning, in coverings for chairs. It has been discussed as stuffing material.

VEGETABLE FIBERS.—*Cotton* is so well known as to need no discussion.¹ A silky appearance is sometimes imparted to some damasks and other cotton fabrics by mercerization, a treatment given the yarn or fabric under tension in a solution of caustic soda.

Rayon or synthetic yarns are produced from spruce pulp or cotton linters by chemical and mechanical processes. The term defines yarns formerly known as artificial silk or gloss silk. Improvement in production recently has given greater strength and better appearance to rayon, although it is still less strong than natural silk. It is often combined with wool and cotton to add the luster of silk to the strength of the other materials.

Flax fiber produces linen. It was the most used commercial fiber until superseded by cotton near the beginning of the nineteenth century. From flax also comes tow used as stuffing material.

Hemp is approximately as strong as flax but not so lustrous. It is used to a limited extent for textiles and cheap carpets. The waste fibers are known as tow and sometimes used in place of flax tow.

Jute is a plant from India, from the fiber of which, sometimes combined with other fibers for effect, upholstering fabrics are made. It is the material from which burlap is made and is much used in the interior of upholstered pieces.

Ramie, also known as "China grass," is grown chiefly in China. It has a luster resembling that of mercerized cotton, and is used for grass cloth or ramie velvets, which are firm but less lustrous than linen velvets. It is apt to be quite brittle when subjected to an unusual amount of flexing.

Having analyzed some of the fibers which form the raw materials for upholstering fabrics, we are now prepared to define some of the textiles made from them.

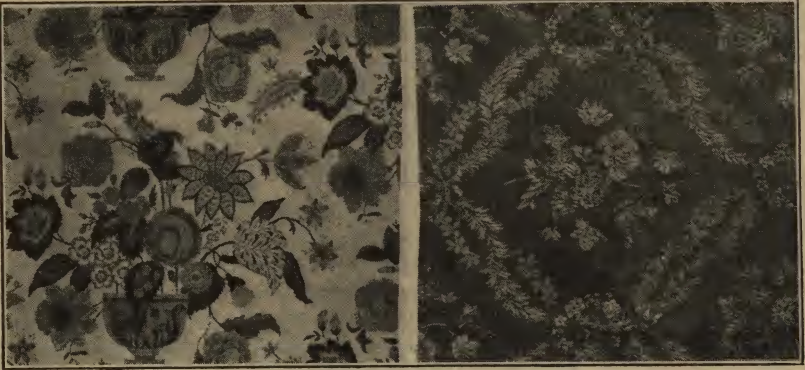
PRINTED FABRICS.—Printed fabrics are produced in great volume and variety by hand and by machine. Many fibers in many weaves are used as backgrounds.

Printed linens are produced on grounds, the smoothness and fineness of which depend upon the scale and character of the design. The hand-blocked linens depend, in cost, upon the quality of the material and the workmanship, and the number of blockings required to form the design. Linen and cotton grounds have been printed with wooden rollers against a padded backing in recent years, which improves the line and color to give the effect of hand-blocked fabrics as compared with those printed with copper or brass rollers.

Cretonnes are unglazed cotton fabrics, usually of plain weave, and of a texture relatively strong and heavy, upon which a bold decorative design, usually floral, is printed. They may be pro-

¹ For a discussion of cotton textiles, see *Cotton Fabrics and Their Uses* (revised 1930), prepared by the textile division of the Bureau of Foreign and Domestic Commerce, Department of Commerce, and available at the division's offices in Washington, D. C.

duced at a cost varying from a few cents to \$15 a yard, depending upon their being machine printed or hand blocked.



Printed linen.

Brocade.

FIGURE 30

Chintzes resemble cretonne but are tightly woven and of fine texture. They are printed on a fine cotton fabric, with flowers or



FIGURE 31.—Chair upholstered in glazed chintz

other decorative designs, usually small in scale. Glazed chintzes are stiffer and have a varnish-like glow. Semiglazed chintzes, less glossy, are more soft and pliable.

Toiles de Jouy is the name applied to hand-blocked linens or cottons which reproduce the designs printed at a factory at Jouy, near Paris, by Oberkampf, from 1790 to 1815.

Warp prints, sometimes called "shadow prints," are woven from yarns upon which the design was printed prior to weaving. They are produced most effectively on plain

and mercerized cotton, although silk, linen, and rayon are used also. The designs lack sharp definition, being necessarily soft and shadowy.

DAMASKS, BROCADES, BROCATELLES, ARMURES, AND REPS.—*Damask* is a flat fabric; it carries a design, perhaps in color, which is brought out in the ground fabric through the manipulation of threads in weaving. In other words, the design is not superimposed on the base, but is continuous with it. The pattern is brought out by light ray reflections as they play upon the fabric from varying angles. Damasks may be woven from silk, rayon, cotton, wool, linen, mohair,



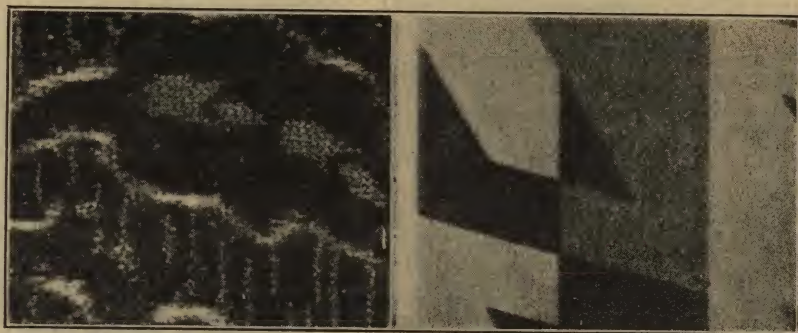
Tapestry.

Damask.

FIGURE 32

jute, from gold or other metallic threads, or from mixtures of these fibers.

Brocade is a figured fabric, differing from the prints and damasks in that the pattern is woven over, or superimposed upon a ground fabric, thus bringing the design into relief. Flowers, foliage, and figures form the principal motifs. An embroidery effect is thus produced on the surface of cotton, damask, satin, taffeta, and other weaves. Metallic threads are sometimes introduced in the figure.



Printed Mohair Plush.

Figured Mohair Plush.

FIGURE 33

Brocatelle, as made to-day, may be distinguished by a comparatively heavy cross-ribbed effect; it may have a satin weave on a less glossy ground of the same or contrasting color. Brocatelle may be made from silk, cotton, or wool, but is usually a silk ground with a cotton filling.

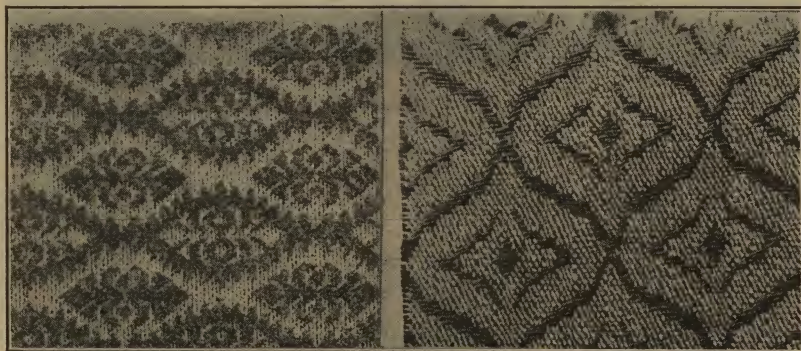
Armures imply a small raised pattern with pebbled or embossed effect.

Rep is a weave in a corded or ribbed effect.

Denim is a cotton fabric showing a twilled weave on the face side. Good denim is durable, inexpensive, available in many colors, and is being produced at present in simple designs of contrasting colors.

TAPESTRIES.—Tapestry is a fabric into which has been worked or woven a design in contrasting colors. Human incidents, flowers, foliage, and other motifs are arranged decoratively against a suitable background. Perspective and high lights are brought out by the manipulation of color rather than of weave (as in damask). Tapestry may be woven of wool, cotton, silk, or rayon, or mixtures of these fibers, by hand or mechanical power on a loom. They vary enormously in appearance and lasting qualities.

VELVETS, VELOURS.—While "velvet" in French means "velours," drapery fabrics are usually called velours and upholstery coverings velvet. The word means "covered with nap," and there are a variety of forms: Cut, uncut (sometimes called looped), and partially cut. In velvets or velours, the fibers (pile) stand upright



Frieze.

FIGURE 34

Figured denim.

above the ground fabric. Velvets are made from silk, cotton, rayon, linen, ramie, and wool. They vary widely in price. Patterns may be obtained in weaving, or by eliminating part of the pile with chemicals or by shearing. Frequently the latter processes lessen the durability of the fabric.

Plushes are long pile velvets of silk, cotton, or wool, but now mostly of mohair. Although under a sharply accurate definition, the pile in plush would be less close and firm than that of velvet, the finest quality mohair plushes have a very close, erect pile. In the ordinary qualities it may be less firm, wiry, and resilient. Genuine mohair plush will not mat down but will spring back into position when the person sitting upon it arises. As yet no method has been devised to give to other materials the resiliency of mohair. This is why it is so highly regarded as an upholstery material. The nap of good mohair plush does not rub off and is easily cleaned.

Friezes (in French "frize") means frizzed or curled, and here refers properly to plushes which have been wholly or partially frizzed. It is now applied to a variety of effects in plush and velvet, including uncut or looped pile patterns on a cut pile ground, cut

pile patterns on a looped pile ground, plain velvets with alternating lines of cut and looped pile and cut velvets.

SATINS AND SATEENS.—Satins and sateens are woven by the same method; the former are of silk, the latter are of cotton. In the weaving, either the filling or the warp covers the surface completely, giving an unusually sleek, smooth, and lustrous appearance.

Taffeta is a plain and closely woven, very smooth silk fabric.

EMBROIDERIES.—While there are many forms of embroidery, only two are mentioned here. The needleworker was highly important when period styles were produced, and the art is equally regarded to-day.

Crewel work was much used in England, from the sixteenth through the eighteenth century. Customarily, it was worked with colored worsted yarns on a plain linen ground. Sometimes the ground was completely covered, but usually it formed the background for the pattern. Much machine crewel work is produced to-day, and it is often very effective although it is natural that the machine can not impart the distinction and character of the finest hand embroidery.

Needlepoint embroidery is made in two forms: The fine or "petit point" (little point) is made by stitches taken from one opening in the canvas ground to the next. The coarse or "gros point" (big point) is made with similar stitches of greater length and with thicker yarns.

LEATHER.—Inasmuch as considerable furniture is upholstered in leather, and also in leather substitutes, these materials merit close examination. The texture of leather is well adapted to Italian, Spanish, and early English interiors, where rugged beauty and warmth of color may be secured through this medium. Masculine club chairs in leather are increasingly used. Leather is quite sanitary and dustproof. In the home where children clamber over the furniture, it is practical because it can be kept fresh by washing with castile or other pure soap. There are preparations on the market, too, to prevent leather from cracking.

Some furniture which is upholstered in leather in the most exposed portions has artificial leather on the outside arms and back. Close scrutiny will reveal which is genuine and which is imitation. In general, artificial leathers are far less durable than genuine leathers; the customer should know which he is getting.

In leather, as in all commodities, there are various grades from good to bad. The best can be told from the worst at a glance, but the great bulk of grain leather obtainable in furniture is just as reputable as the maker and distributor wish it to be. Therefore, as in so many other phases of furniture construction, the integrity of the merchant with whom you deal is highly important.

The same applies to artificial leathers: Some are durable and water-repellant; others are shoddy and absorbent.

Italian and Spanish Styles (1400-1750)

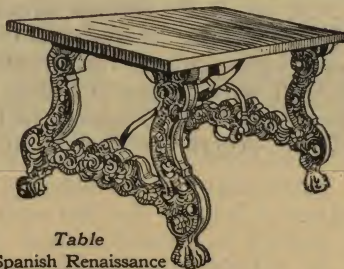
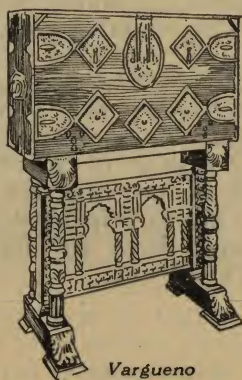
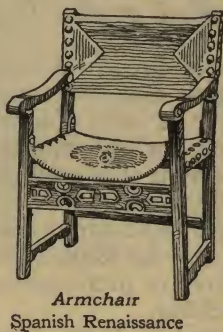
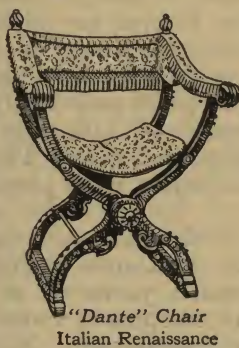
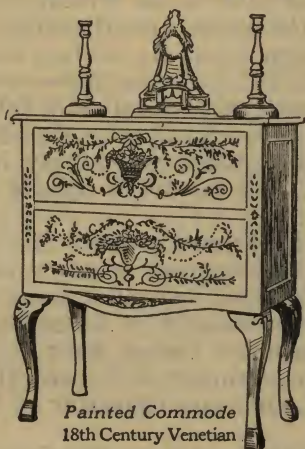


FIGURE 35

PART III

Chapter 11.—PERIOD STYLES COMMONLY USED TO-DAY

THE NAMES of nations, monarchs, and creators of furniture styles are reflected in the names of the periods. There are some 40 eras which have been honored by reproducing the furniture used at those times, but only a dozen have exerted an influence at all profound.

There are four outstanding epochs following the Gothic, which affected all European countries. The first was the Renaissance, when the rebirth of art, science, and literature occurred. The decoration of this period was classic. Following the Renaissance—the Baroque—with emphasis placed upon the romantic. The next episode, the Rococo stressed the naturalistic and avoided every semblance of symmetry. The Neoclassic revival saw a reawakening in classical forms, following the excavation of ancient ruins.

The Gothic Period (1100–1453).

The Gothic period occurred between the medieval ages and the Renaissance. It was the time of the crusades to the Holy Land, and the returning crusaders brought with them refreshing ideas from the eastern lands. Inasmuch as the people of the time were deeply religious, the Gothic influence was felt to a large degree in religious structures and the motifs of Christianity were carved in oak. Its particular reflection to-day is in churches, where pews, pulpits, and chairs of massive and majestic proportions are seen frequently. Gothic architecture is found in more modern churches than any other style.

The lines of the Gothic style were straight and rectilinear; the effect was formal; the ornaments consisted solely of carving. The material was oak, with some pine, rubbed with wax to a soft, dull glow. Heavy chests were the furniture most used; stools and benches were employed instead of chairs. Cupboards and dresser-cabinets for displaying plate in the dining halls, and enclosed, canopied beds were other pieces used.

The Renaissance in Italy, Spain, and France (1453–1560).

When Europe was “reborn” after the medieval ages, the Renaissance brought renewed interest in furniture as well as art and literature. In Italy, ornate carved pieces were used in formal halls of princes of church and state. The principal wood was walnut; the decoration was classical with fine restraint; rich, colorful dignity was expressed in the upholstery. Italian Renaissance reproductions to-day are scaled to the large home but would be incongruous in a bungalow.

As the Renaissance swept westward, Spain and France caught the infectious appeal of rich, massive, magnificent furniture. Spain had thrown off the yoke of Moorish occupation. (This was the era following Columbus’s discovery of America for Spain.) The Mohammedans left behind them in Spain their love of glittering splendor.

Walnut and oak furniture were studded with brass and iron, and metal mounts were freely used. Bright red and rich green velvets were used in the trimmed and fringed upholstery, and decorated leather was also employed. Modern reproductions are well suited to many modern homes, particularly to those of Spanish architecture. Spanish furniture is massive, rugged, masculine, square, and sturdy. It is suited to use with Italian and French Renaissance furniture, as well as some early English designs.

In France during the Renaissance, art was subsidized by the wealthy nobility. The furniture was solidly substantial like the Italian, but of greater height and carved more elaborately. Walnut was the most-used wood. The design was strongly architectural. Such furniture reproduced to-day needs space in which to be displayed properly but it is well adapted to certain modern uses. It blends with Italian, Spanish, and Gothic designs.

English Styles.

TUDOR-ELIZABETHAN, JACOBEOAN (1500-1688).—As the clank of armor subsided in giant halls, massive, sturdy furniture replaced the stark and necessitous pieces of feudal days in early England. The Tudor-Elizabethan era was the Renaissance in Britain.

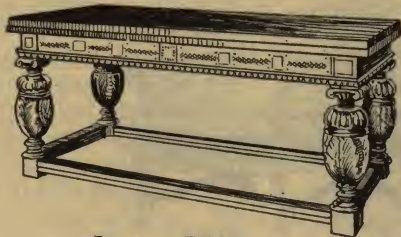
Oak in simple wax finish was carved elaborately in extravagant and forceful forms. Furniture of this era foreshadowed that of the more refined and graceful Jacobean period which followed. Some dining room suites and occasional pieces are reproduced to-day, but interest in Tudor styles is chiefly caused by the fact they represent the first swing toward decorative furniture and buildings. When this style is used, it properly belongs in large Gothic or Tudor homes.

An interesting development of recent years is the return to favor of Jacobean design. Early Jacobean furniture (1603-1649), sometimes called Stuart, was particularly sturdy. It utilized the same oak that was employed in Queen Bess's day. It was the style of furniture that inspired early American styles in the colonies. In the middle Jacobean or Cromwell epoch (1649-1660), the gate-leg table evolved and it is to-day one of the outstandingly popular designs in use, being at the same time beautiful and suitable. The Puritan simplicity of line and form was likewise reflected west of the Atlantic.

Late Jacobean, or Charles II (1660-1688), furniture is increasingly used to-day; the severity of Cromwellian morality having been replaced by a merry monarch's love of luxury, the designs reflected this lighter attitude toward life. Both oak and walnut were used in that period, and both woods are employed in modern reproductions. Bedroom, dining room, and living room pieces are made to-day in solid, substantial design with a rich, warm, mellow finish which withstands wear and abuse remarkably well. It can not be crammed into tiny spaces, but many designs are now available built on a scale appropriate for small bungalows and apartments.

WILLIAM AND MARY, QUEEN ANNE (1688-1714).—When James II abdicated, his daughter Mary and her husband William of Orange became England's rulers. They came from Holland and brought with them still lighter, more graceful, and more comfortable furniture. Indeed, domestic comfort made its first bow with the Dutch invasion of the British court. Walnut supplanted oak as the out-

English Styles (1560-1690)



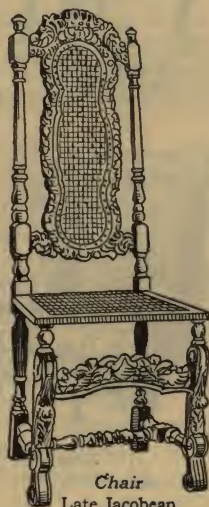
Draw-top Table
Elizabethan



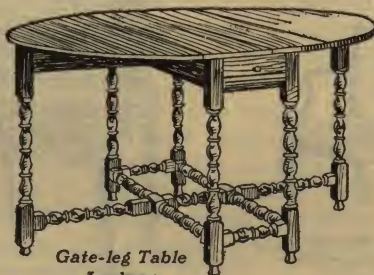
Armchair
Elizabethan



Armchair
Late Jacobean

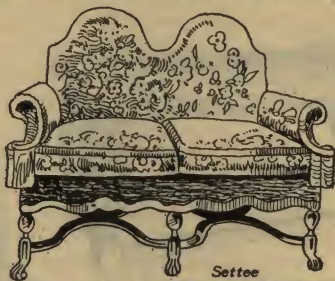


Chair
Late Jacobean



Gate-leg Table
Jacobean

English Styles (1690-1760)



Settee
William and Mary



Armchair
Chippendale



Chair
Late Queen Anne



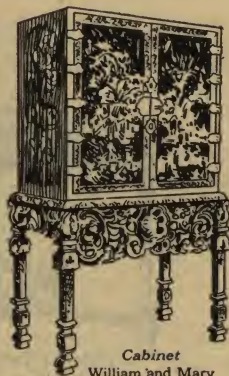
Wing Chair
Queen Anne



Armchair
Chippendale



Armchair
Chippendale



Cabinet
William and Mary

FIGURE 37

standing wood, and veneers first came into common use. Upholstery was considered highly important; needlepoint embroidery was fashionable; damasks, velvets, and chintzes in strong, vigorous hues were employed. This comfortable style of furniture is adapted to most modern homes.

The Dutch accent William brought with him waned, but the Dutch influence lingered on to dominate the English domestic scene. Queen Anne furniture assimilated the curved beauties of Dutch design to such an extent that it has been revived time and again for modern use. The cabriole leg (shaped like a bent knee) is a distinctive mark of the style which Chippendale later developed and made his own. Solid fiddle-shaped splats in the backs of chairs are another Queen Anne characteristic. Fine veneering was much used. Simple, livable, and home-like, this style of furniture fits into almost any home, although the Dutch Colonial home seems most perfectly adapted to its use.

THE GEORGIAN PERIOD (1715-1800).—Two distinct developments occurred during the eighteenth century in England. The first was the continuation of evolutionary processes which had been felt during the preceding centuries. This resulted in a type of furniture called "Georgian," named for the three reigning monarchs (the Georges I, II, and III). The second half of the century witnessed a revolution which did not displace but paralleled the evolution. In this era four master designers became so important that their names, and not the names of the rulers, were attached to the furniture they originated.

Thomas Chippendale, George Heppelwhite, Thomas Sheraton, and the Brothers Adam, working during the latter half of the eighteenth century, produced wonderfully dignified, charming, characterful furniture. Some of the finest furniture made in France and in America was designed and constructed at the same time, and the era is known as "the golden age of furniture." Approximately 65 per cent of the furniture manufactured to-day is based upon eighteenth century designs.

The British nobility lived in regal splendor during an age of powdered wigs, patches, and satin knee breeches. In France an arrogant court was disdainful of expense when it was possible to produce delicate, distinctive decorative designs. Mount Vernon, home of George Washington, and Monticello, home of Thomas Jefferson, demonstrate the elaborate and ornamental quality of furniture used in this country during this period.

The early Georgian designs are less important than the later ones which paralleled the work of the four outstanding designers.

Thomas Chippendale (1710-1779).—To Thomas Chippendale, first of the group, was due much of the vogue for fine furniture. He was not only a good designer and producer, but an intelligent business man as well. He served tea in his cabinet shop while displaying his wares to milady and her dandified escorts. His reputation spread, and he was the first to attach his name to a definite style.

Chippendale was the first to employ mahogany to any considerable extent. His contemporaries found it equally beautiful, but combined with it rare cabinet woods for effective contrast.

Chippendale was a wonderful designer, carver, and cabinetmaker. He took ideas from China, lattice chair backs and pagoda motifs; hints from France, serpentine front cabinets; adaptations of Queen Anne, pierced splats in chair backs and the cabriole leg. He adapted these, molding them to his needs, and his name is associated with each of the different types.

Carving was Chippendale's chief ornamentation. Improvement in present day methods of obtaining beautiful wood pattern and figure through veneer cutting, have made it possible to secure equally attractive furniture in the Chippendale manner which is less costly than intricate carved pieces. Much Chippendale furniture is reproduced to-day, blending well with the designs of the masters who followed him, as well as American Colonial styles of Georgian inspiration. The best designs are exquisitely proportioned.

Robert and James Adam (1760-1792).—Lightness and grace are characteristics which are immediately noticeable in the work of the Brothers Adam. Architects by profession, they brought to furniture a classical conception of line and form. They entered the field of furniture design in order to complete the interiors of structures in which they wished to make each minute detail as perfect as it could possibly be made.

Robert Adam spent considerable time in Pompeiiian excavations, carefully sketching details. These were introduced to England when the curvilinear style was at its zenith and the rectilinear classical form was really revolutionary. The style may be recognized by its slender straight lines, tapering legs and flat surfaces; ornamentation was painting or gilding and inlay. The urn and vase were favored embellishments.

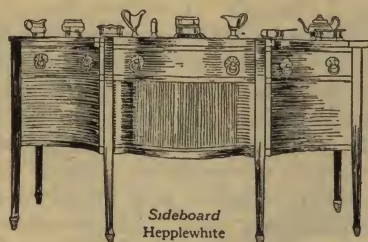
Because of its dignity, delicacy, and evident restraint and grace, it appeals to those who enjoy classic simplicity. Adam tables, mirrors, and chairs are very useful as "accent" pieces when a note of diversity is desired.

George Hepplewhite (1765-1795).—The person with little knowledge of form or design usually recognizes, without difficulty, the intrinsic beauty of furniture made in the styles originated by Hepplewhite. This refined and slender but sturdy type of furniture is well suited for the dining room, the bedroom, and the living room. The line and proportion are light and graceful.

George Hepplewhite specialized in the straight, tapering leg as opposed to the Chippendale cabriole. His chairs, with distinctive shield back or interlacing hearts, were used in Colonial America as well as in England, and are one of our most delightful mementoes. Sideboards may be distinguished from those of Sheraton in that the ends are concave or curved in, whereas those of his contemporary designer curve out. Wheatears, Prince of Wales plumes (three feathers tied together), and bellflower husks were favorite embellishments. Dining-room tables frequently were supported at each corner by two slender legs instead of one more substantial one.

Thomas Sheraton (1751-1806).—A commercial failure in his own day, Thomas Sheraton is regarded to-day as one of the foremost furniture designers of all time. Wood carver, itinerant preacher, designer, with the clothes of a crossing sweeper and the voice of a fish huckster, he died as he had lived—in poverty.

English Styles (1760-1800)



Sideboard
Hepplewhite



Settee—Sheraton



Chair—Adam



Armchair
Hepplewhite



Armchair
Sheraton



Side Table—Adam

Although he affected contempt and derision for Hepplewhite, he was not backward in borrowing and altering his designs. At the same time, he received much inspiration from French styles of Louis XVI. "Translating" designs of others, he improved them. He had such critical judgment that he became master of straight line and geometric forms and his knowledge of classic principles made his work stand out as delicate, simple, and refined.

Despite apparent delicacy, Sheraton furniture is structurally sound. Slender legs, usually round but sometimes square, tapered and often reeded; square chair-backs with a central panel rising above the top rail; plain, striped, and flowered silks, and gold and silver brocades for upholstery are characteristics of the style. Mahogany for dining room, bedroom, and library furniture, and rosewood, satinwood, and painted furniture for the drawing room were the principal woods used. Inlay was the favorite form of embellishment used by Sheraton.

The French Styles.

LOUIS XIV (QUATORZE) (1643-1715).—Called Louis "the Grand" and "the Magnificent," Louis XIV established royal workshops to execute the regal and magnificent designs he visioned and described to his craftsmen. Walnut, oak, ebony, and chestnut were the woods used, rare woods and tortoise shell for veneer and inlay.

This period marked the evolution of the straight line toward the curve, which predominated in the following epoch. The straight line was usual; proportions were large, massive, dignified, and formal.

Louis XIV furniture is seldom used to-day save in large and luxurious quarters. Although it is gorgeous, it is not overornate or vulgar. Its purpose was for show; comfort was not considered of great importance.

THE REGENCY (1715-1723).—Louis XIV reigned for 72 years, and was succeeded by his grandson, Louis XV, then 5 years old, in 1715. The Duke of Orleans acted as regent until the youthful monarch reached his majority, and the short transitional period is known as the regency.

This era marked the beginning of a newer and lighter vein in furniture design. The curved line replaced the rectilinear forms which predominated under Louis Quatorze. The change was similar to that which occurred in England between the late Jacobean and early Queen Anne styles. New furniture appeared: Commodes and chiffoniers with many drawers; concealed panels were employed. Regency furniture is more significant as a change from the old than as a style which will ever receive great popular favor. The later refinements of the Louis XV period are modifications which are most attractive.

LOUIS XV (QUINZE) (1723-1774).—Probably the outstanding age of the world in decorative furniture, the period of Louis XV is notable for its rich and luxurious creations. The curved line utterly routed the ponderous, massive Louis XIV style with its rectilinear forms. The style is distinctly feminine.

Walnut, mahogany, and ebony were used effectively, and lacquers and gilding covered much of the wood to good advantage. The

Early French Styles (1500-1750)

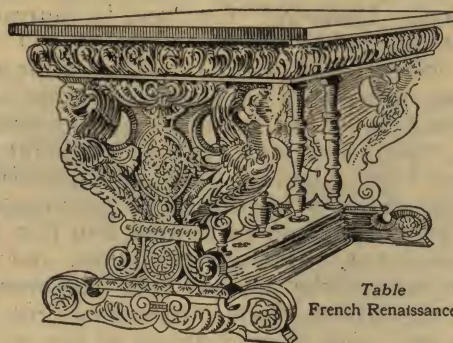
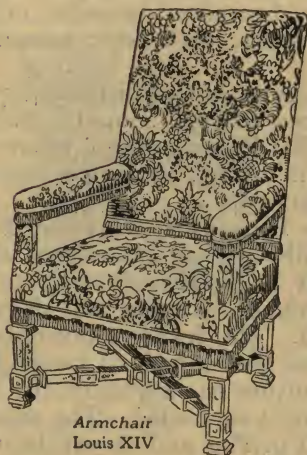
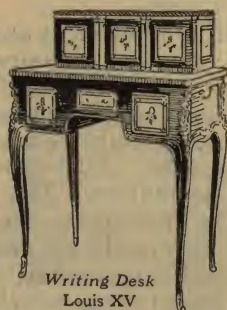


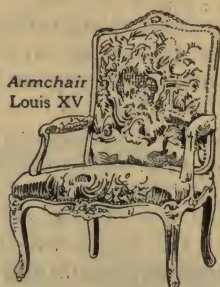
Table
French Renaissance



Armchair
Louis XIV



Writing Desk
Louis XV



Armchair
Louis XV



Armoire
Louis XIV



Commode
Louis XV

FIGURE 39

cabriole leg, refined from the substantial Queen Anne variety, was used almost entirely, and scroll feet were usually employed.

The modern reproductions are suited to homes where fastidious elegance is desired. Louis XV furniture is charming but must be chosen most carefully to blend with other styles.

LOUIS XVI (SEIZE) (1774-1793).—The whimsical child-queen Marie Antoinette, rather than her weakling spouse, Louis XVI, best typifies the personality of the furniture of this outstanding period. It is a slender, straight-line style with a delightful return to classicism; it is a direct and vigorous reaction against the rococo ornamentation and the excessive curves of the previous reign.

Cherubs, love birds, garlands of flowers, and love knots were some of the motifs employed. Mahogany, walnut, and satinwood were much used; the walnut was finished both in natural grain and in enamel. Round medallions, ovals; heads, busts, and human figures; fluting, reeding, and beading are features of the style. For upholstery fabrics, silks, figured satins, brocades, damasks, muslins, and velvets in pastoral and floral designs, with later extensive use of stripes, are typical.

Because of its refinement and dignity, its sophisticated grace, much Louis XVI furniture is reproduced to-day. Small in scale, simple and feminine, it is adapted to the drawing room where a marked effect of delicacy and daintiness is desired, or in the boudoir where womanly charm should be accentuated.

THE DIRECTOIRE (1795-1804).—Five directors ruled France following the Revolution. The guillotine had eliminated the aristocracy, and the directorate wished to be rid of every reminder of royalty. Consequently all monarchical ornament was discarded, and simple classical forms substituted. The features taken from Greek and Roman architecture which had been a part of Louis XVI styles were retained, and Directoire furniture has a quality of "livability" in which it surpasses the furniture it succeeded. The woods as well as the contours were retained, and griffins and caryatides were much used.

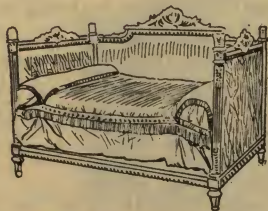
EMPIRE (1804-1815).—Aides of Napoleon, demanding a militaristic, masculine style of furnishing after the swing to soft, feminine styles, sought the forms of ancient Rome. Consequently, the furniture was heavy and ponderous, and the letter "N" was frequently used in upholstered wreaths to honor the little corporal.

The Empire style was widely used in nineteenth century America. Because Duncan Phyfe, this Nation's foremost designer, was a contemporary, his early designs hover between those of the Colonial Georgian era and the Empire. Later his work was contaminated by too close adoption of the heavy, grandiose, pompous, French style.

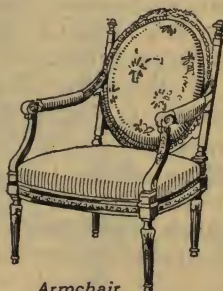
Frequently Empire furniture is adapted to use with modern designs.

FRENCH PROVINCIAL (1715-1793).—In the provinces of France, particularly in Normandy, furniture styles were evolved which were simpler than those used in the royal court and the metropolitan centers. Like the Pilgrims, French craftsmen outside of Paris found it necessary to produce useful furniture from the available woods. Most of their designs were copied from the Louis XV and Louis XVI styles, with some necessary simplifications; some were

Later French Styles (1750-1815)



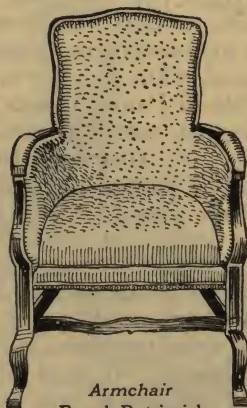
Bed—Louis XVI



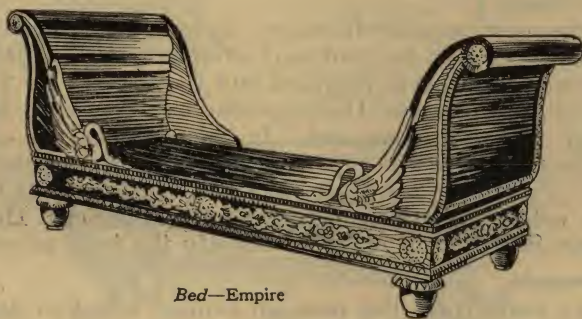
*Armchair
Louis XVI*



Armchair—Empire



*Armchair
French Provincial*



Bed—Empire

provincial interpretations of these styles. Oak, walnut, chestnut, pine, ash, beech, and the fruit woods—pear, apple, and cherry—were used. Much of this furniture was finished with wax, either with or without stain.

Because of their simplicity, many French provincial pieces will be found to harmonize with the early American designs in line, texture of wood, and color. Some of them blend, too, with the less formal Louis XV designs. Part of the furniture was used by the peasantry; a large amount of it was the property of the provincial gentry. It is pleasant, often informal, and well suited to many American homes.

American Furniture.

The furniture of the United States parallels in its development the furniture of Europe. Early American designs are simplifications of English styles, the sturdy and unassuming qualities which we find so desirable to-day being stern necessities in the days of our forefathers.

AMERICAN PERIODS (1620-1931).—Jacobean furniture was the first style to influence American designs, the Puritan attitude in New England being perfectly reflected, and consequently it is entirely proper to mingle the American and British styles of this period in the same rooms to-day. In New York, the Dutch influence was felt, and there is an intelligent fusing of the Queen Anne style with the Dutch Colonial. The Quaker environment, together with the Dutch spirit, was felt in Pennsylvania, whereas the southern Colonies, particularly Virginia, marched stride for stride with Georgian England.

The history of American furniture may be divided into three groups: Early Colonial, a period which ends at about 1725; late Colonial, which goes to 1790; and the Federal period, which runs from 1790 to 1825. Duncan Phyfe epitomizes the latter era. His best work was done between 1795 and 1818.

Reproductions of the early American pieces have achieved wide acceptance to-day, maple being one of the chief woods, for it was used at that time together with white pine and the fruit woods, particularly cherry. Walnut of surpassing beauty was employed in Dutch New York, and it was used extensively, too, in Pennsylvania. When, in 1710, mahogany began to develop a following, it was a favored wood, and was used extensively in Pennsylvania and the southern Colonies.

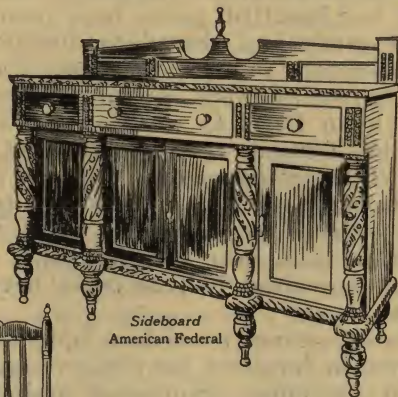
One of the most popular furniture styles used in America to-day, the Colonial type, may be combined effectively with eighteenth century designs originating in England and France.

Designs of Chippendale, Hepplewhite, and Sheraton were widely imitated by Colonial designers. In consequence we see definite traces of their work in the reproductions sold throughout the country to-day. So strong was their influence, that Colonial furniture is frequently called American Chippendale, American Hepplewhite, or American Sheraton in order to classify the type properly.

Modern Movement.

For many years there has been an evident effort to design furniture which truly represents the dynamic speed and energy of twentieth century existence. Design has improved in architecture, in the lines of automobiles, in stage settings, and even in airplanes. Then

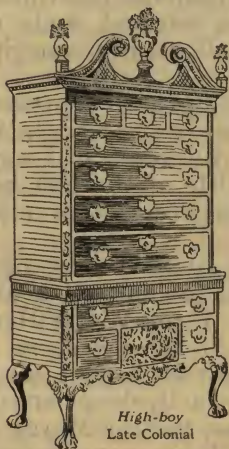
American Styles (1650-1930)



Sideboard
American Federal



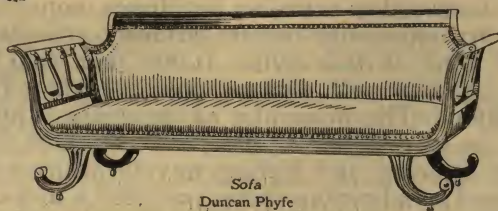
Banister-back
Chair
Early Colonial



High-boy
Late Colonial



Dressing Table
Modern



Sofa
Duncan Phyfe

FIGURE 41

why not in furniture? Effort has been made, both in this country and in Europe, to evolve new furniture styles which have a harmony of spirit with modern modes and living conditions.

Many creditable and beautiful pieces have been produced. Likewise, a number of gaudy and absurd productions have appeared, showing absolute disregard for the principles of art, furniture, and decoration. This is true of every new and radical movement. In 1925, there was held in Paris an international exposition of contemporary art which formed the crystallization of modern ideas concerning this style. Contemporary designers are attempting to achieve harmony between the old and the new types of furniture. The phrase "art moderne" as well as the word "modernistic" are misnomers since with each year "modernism" would go out of date, because patterns evolved in 1925 could hardly be considered "modern" in 1950.

Perhaps the greatest success in modern furnishings in this country has been achieved in furniture for clubs, restaurants, hotels, and in small rooms for the home. Sun-porch and outdoor furniture, requiring no particularly radical background changes, has been accepted to a greater extent than has the less mobile type suited to interiors.

Because of the contrasts with conventional styles—startling striped effects in woods, brilliant coloring in textiles, and eccentric shapes—the first impression of modern art in furniture was one of bewilderment. In modified form and with suitable restraint, some of it undoubtedly expresses the effort of youth to free itself from that slavery to the conventions which prevents individuality. An eighteenth century gentry had time for leisured study of minute detail, whereas the speed era of to-day allows just enough time for broad masses and bold detail.

It has been the fate of all furniture styles to contribute to the esthetic phases of their epoch and then pass on. Only the future can tell whether the modern movement in furniture will appear as a manifestation of the surging, dynamic life of the first half of the twentieth century, or whether it will be regarded as an uneconomical caprice.

Although it has been the aim of the contemporary designers to achieve hitherto unapproached patterns, the traditions of the centuries could not be eliminated entirely. Pompeii and Herculaneum influenced the Brothers Adam and the French designers. Some of the modern design may be traced to ancient Egypt; some of it is based upon the nineteenth century German Biedermeier style; some on the designs of the Etruscans, the Incas, and the Mayas.

The modern homemaker needs an intelligent appreciation of what contemporary art represents before seriously considering the furnishing of the home in this style. It has been said that the new style mingles joyously with that of past periods. This statement needs qualification. The principles of decoration apply to modern styles as they do to designs of ages past. If there is harmony of design, texture, coloring, and feeling, any furniture will blend with that which is used in adjoining space, provided a nice discrimination is employed.

Concerning Antiques.¹

No more puzzling problem faces the furniture consumer than the selection of antiques. There are so many clever imitations that it is difficult to tell the spurious from the genuine. A thorough knowledge of period styles and of construction methods as practiced through the ages, together with ability to identify woods and a keen sense of observation, are some requirements for appraising antique furniture.

The value of most commodities depends upon their availability and the demand. The fancy for antiques is of comparatively recent origin. A score or so of years ago, some persons with a real knowledge of early furniture styles succeeded in finding some really rare pieces of fine old furniture hidden away in attics and storerooms. They were purchased at ridiculously low prices. As time went on, the public began to purchase antiques on a large scale and their value grew rapidly.

It is a recognized fact among connoisseurs that little artistic furniture was produced in this country during the last half of the nineteenth century. During the early colonial days and the early period of the republic, the population of this country at no time exceeded 3,500,000. Of this number, only a relatively small percentage could afford luxurious furniture, since, as in all new countries, most people were busy building up their industries. It is therefore reasonable to assume that the quantity of valuable or artistic furniture must necessarily have been rather small. Much of the so-called early American furniture of New England and of southern colonial styles on the market to-day unquestionably consists wholly or in part of reproductions. The present number of pieces of so-called antiques in use would far exceed the entire stock of furniture in use a hundred years ago.

"But," you ask, "what difference does the genuineness of the piece make if it has the beauty of line, proportion, woods, and distinction of the piece it purports to be?"

Although there may be no actual difference in appearance, the piece which pretends to be something it is not will cost several times as much as an acknowledged reproduction. It is not the purpose of this booklet to discourage or encourage the purchase of genuine antiques or reproductions, but to tell the consumer the truth regarding both. The purchaser of either class of furniture should be given the facts.

In many instances, old furniture sold as genuine may consist of only one or a few parts of the original piece, the balance being added either from old wood or from new wood stained to imitate the old.

¹The word "antique" can correctly describe only old objects. But how old? Under prevailing conditions it was necessary to establish an arbitrary age for any object of art in arranging a tariff schedule and the period was set as 100 years. Naturally a definite standard would be helpful, and a definition of the word "antique" and of related terms which might be used in buying and selling such an article, would be equally advantageous. At our request, the following definitions were suggested by Richard F. Bach, director of industrial relations, Metropolitan Museum of Art, New York:

"An *antique* is an old piece. Only such reconstruction or restoration as is absolutely necessary to keep the object in use or suitable for exhibition is admissible.

"A *reproduction* is made entirely from new materials according to an old pattern, sometimes given marks of wear, since the effect of age seems to call for that, and sometimes given only a patina to enhance this quality. This is done to create what is called 'atmosphere' on the stage. Reproductions vary in excellence by thousands of degrees, many of them not being reproductions at all, but retaining with more or less correctness certain features or elements of period styles."

In this way it is possible to make two or more "antiques" from one piece of furniture.

It is often difficult even for the expert to determine whether an antique is genuine or spurious. It is neither possible nor practical, therefore, to give an outline of methods to be followed in detecting imitations. The advice previously given in this book—to deal with reliable distributors—is most important in this instance.

The method of one store in which antiques are sold is worthy of emulation. Every piece of old furniture purchased by the store is completely dissected. In upholstered pieces, the original stuffing is removed and new stuffing substituted in order to protect the consumer's health. Every spring is inspected, and broken springs are



FIGURE 42.—Because furniture such as this belonged to grandfather, it is sometimes mistakenly believed to be antique. It lacks beauty of line, proportion, and good taste in this modern age

replaced; new webbing is inserted; the entire piece is carefully gone over and the construction strengthened, all of this not detracting in the least from the intrinsic value of the piece. In fact, it is made infinitely more serviceable. When old furniture is found to be so defective that one or more of the principal component parts must be replaced, the piece is not sold as a genuine antique but is sent to the reproduction department of the store, which is kept entirely separate from the antique division.

The fact that a piece of furniture may be a hundred or more years old is no guarantee that it will beautify the home. Much ugly furniture was produced in the early days, and unless an antique has historic interest or artistic value, it will detract from rather than add to the beauty of a home.

Unfortunately, there are being hoarded to-day many hideous pieces of the Victorian era which the owners fondly believe to be antiques. These really belong in a museum of monstrosities. A nation which grew from 3,000,000 to 122,000,000 in population in a century and a half, could not escape growing pains, and of these the mid-nineteenth century pieces of furniture are among the most painful.

But if the home maker does possess a genuine antique of pleasing appearance, she has a splendid opportunity to use it as a keynote for the other furniture in the room. Modern manufacturers are reproducing so many period styles that it is easy to complete the room with other pieces which harmonize in spirit with the masterpiece. It will not be necessary to match the exact period, for in most homes a combination of styles is used. It is well to remember that rooms are smaller and ceilings are lower than formerly in most modern homes, so that the proportions of the fixed backgrounds and the furnishings must be adjusted.

Characteristics of outstanding periods

Period	Historic date	Lines	Proportions	Woods	Upholstering fabrics	Modern use
French: Louis XIV.....	1643-1715	Straight.....	Massive.....	Oak, walnut, ebony, chestnut.	Rich tapestries, gobelins, velvets.	In large homes, hotels, where dignity is desired.
Louis XV.....	1723-1774	Curved.....	Smaller, graceful.....	Oak, rosewood, mahogany, walnut, beech, and inlays.	Needlepoint, tapestries, damasks, velvets, prints.	Where ornate elegance is desired.
Louis XVI.....	1774-1793	Straight, a few long curves.....	Dainty, small, light.....	Beech, mahogany, walnut, rosewood, satinwood.	Delicate damasks, brocades, silks, satins.	Well adapted to all rooms, particularly bedrooms.
Empire.....	1804-1815	Straight with ovals.....	Heavy, massive.....	Mahogany, ebony, rosewood.	Rich, heavy fabrics, leather.	Blends with Phyfe style. Also the modern.
Early English: Jacobean.....	1603-1688	Straight.....	Sturdy, strong.....	Oak, some walnut.....	Needlepoint, velvet, leather, brocades.	Very popular in dining room, bedroom.
William and Mary, Queen Anne.....	1688-1814	Straight to curved.....	Lighter than previous styles.....	Walnut.....	Needlework, chintzes, damasks, leather.	Well adapted to simple, dignified, livable homes.
Georgian: Chippendale.....	1710-1779	Combination straight and flowing curves.....	Substantial but light and graceful.....	Mahogany.....	Brocades, needlepoint, leather.	Chairs, very popular; also for tables.
Hepplewhite.....	1765-1795	Curved, except chair legs.....	Slender, small, but sturdy.....	Mahogany, satinwood, rosewood, inlay.	Light brocades, damasks, haircloth, rush.	One of most widely used to-day in living room, dining room, and bedroom.
Sheraton.....	1751-1806	Straight, a few curves.....	Delicate, refined, slender, narrow.....	Satinwood, rare woods for inlay with mahogany.	Damasks, brocades, haircloth.	Much used in delicately graceful rooms.
Adam Bros.....	1760-1792	Straight, rectangular.....	Exquisite, graceful.....	Mahogany, maple, pine, (painted or gilded.)	French brocades, moire.....	Against tasteful, formal backgrounds. with Louis XVI.
American: Early American.....	1620-1725	Straight.....	Simple, sturdy, practical.....	Maple, oak, pine, ash, fruit woods.	Rush, chintz.....	Against rugged backgrounds.
Colonial.....	1725-1790	Curved and straight.....	Solid, substantial.....	Mahogany, black walnut.....	Chintz, haircloth.....	Well suited to Colonial homes.
Duncan Phyfe.....	1795-1847	Curved and straight.....	Slender, graceful.....	Mahogany, although some reproductions are in walnut.	Brocades, satins, damasks, haircloth. Pattern often had stripe.	Against refined background.

Chapter 12.—HARMONIOUS COMBINATION OF STYLES

MOST OF the furniture used in American homes to-day is adapted more or less freely from the various historic styles. In buying for our homes, therefore, we have two choices: We may select all or most of the pieces required from the particular style which best pleases us, using the same style throughout; or, we may choose individual pieces or groups from a number of styles in which the fundamental relations of colors, woods, proportions, contours, and textures are sufficiently alike to insure harmony.

It is, perhaps, more difficult to combine several styles harmoniously than it is to adhere closely to a single style. However, no problem is presented that can not be solved by a little care and taste, which a clever Frenchman once characterized as "a delicate common sense."

Furniture should be chosen to suit the tastes and preferences of the home maker, and to match the architectural features of the room in which it is to be used. It is thus possible to narrow the number of styles from which the choice is to be made to a small group in which there is still a broad field for individual taste and ingenuity.

Before evincing interest in the names of styles, the home maker might ask some questions: "What do I want this room to be? What is the effect I wish to create on my guests, on my family, on myself?" Having answered these queries to her own satisfaction, she may then set out to select the various types of furniture which will achieve the desired result.

The importance of harmony in the essential idea back of any furniture form is illustrated by Thomas Chippendale and Duncan Phyfe. Chippendale borrowed ideas from the ancient Chinese, and also from the French, and molded them into designs which bear his name to-day. In America, Phyfe combined the materials and the forms of the Englishman, Thomas Sheraton, with those of the designers of France.

A customer once said to Phyfe: "But isn't it a little like those French styles we see so much of these days?"

"Just as like," he replied, "as they resemble the styles which preceded them—and the connection goes back to Eden."

He was correct. Style is beauty, adapted to the spirit of the times. Modern furniture designs, in the main, combine the features of design, comfort, construction practices, and utility which rich years of experience have proved most suitable.

Old Customs—Old Eccentricities.

The interiors, as well as the habits and customs of those living in them, will not permit many rooms done "to-the-letter" within period limitations in most American homes. When women wore yards and yards of material in their skirts and piled their hair in pompadours 2 feet high, their furniture met the needs of their day. Historic period furniture reflects the manners, philosophies, and customs of

the world through varying stages. To ape the worst features of period design in modern times is obviously incongruous and absurd.

Conversely, the fads, the "latest things" to-day may be out of date tomorrow. Exaggerated detail is inconsistent with the principles of beauty, and is striking merely because it calls attention to unimportant parts of the whole. Phrases such as "very popular this season" or "all the rage" are misleading. That which sells best from season to season in the stores has no real importance compared to the suitability and utility of furnishings.

If the taste of the home maker is for light, slender, graceful pieces and the room to be furnished is light, smooth textured as to walls, with white, cream, or putty-colored woodwork, the problem is comparatively simple. If the personal preference runs to heavy, massive, and robust furniture and the room to be furnished is large with rough textured walls, or dark paneling with dark, heavy woodwork, again the solution is relatively simple.

If, however, the individual preference is for light, graceful pieces while the room to be furnished is diametrically opposed in the characteristics of the fixed background, a problem is offered which may be somewhat difficult of solution. Either the architecture must be altered to suit the taste of the home maker, or the family must make its taste in furnishings conform to the rooms to be furnished. A possible compromise is to furnish the rooms with furniture of transitional character in which the proportions are neither massive nor slender, in which the textures are neither ultrafine nor ultracoarse, and in which the contours are both curved and rectilinear.

The previous chapter discloses that the earlier types of furniture were massive with coarse textures, dark woods, and the contour predominantly straight line. Then came a transition, until in the latter part of the eighteenth century the slender line, the graceful, delicate forms, the fine textured woods and textiles, and the softening effect of the curve had completely replaced the characteristics of the earlier types.

Titles Mean Little.

The heavy massive style may have been a Renaissance form originating in Italy, Spain, France, or England. The light and delicate type of furniture may have been Hepplewhite, Sheraton, or Duncan Phyfe. The period name is relatively unimportant unless the home maker has a particular fondness for the characteristics of some particular design.

Between the two extremes lie certain styles in which neither the ponderous nor the dainty is emphasized. These might include William and Mary, Queen Anne, and some of the heavier Chippendale pieces. Again the period name is purely subjective as a measure of value, for essential harmony is the objective—not the pursuit of phantom assets.

Sheraton, Hepplewhite, and Duncan Phyfe furniture is used together to-day, not because the styles were practically contemporaneous, but because they emphasize the same emotional values. A room in which the key pieces—the cabinets, tables, and chairs—have harmony, and at the same time are in keeping with the architectural background, will have a stylistic tone no matter whether the designs

originated in this country, in Britain, or on the continent, for the same ideas have found expression in it.

In Figure 43 an oak chest is flanked by two dining-room chairs. The one at the left has most of the elements which make it exactly the wrong chair to use with the chest. The chest is rectilinear, dark, coarse in the texture of the wood, ponderous in proportion, robust in every respect. The pedestals supporting the top of the cabinet are bulbous. The carving is virile. The chair at the left with its shield back is curvilinear. Its lines are delicate and graceful. The mahogany is a fine-textured wood, unsuited to use with the oak. The lines are slender. The whole effect is one of daintiness and femininity.

The chair at the right—the correct chair for use with the cabinet—is solidly substantial; preponderantly straight line in contour; the



FIGURE 43.—This chest is flanked by two chairs, one of which is similar in design, scale, texture, and line while the other possesses every feature which is opposed to that of the massive cabinet

wood is oak, of the same texture as the chest. The upholstery is a tapestry with a dark background, an essentially appropriate fabric for use with oak furniture.

In the chair at the left, the light, fine-textured damask is not an appropriate covering for use with oak furniture, albeit perfectly suited to the Hepplewhite-mahogany chair it adorns.

In Figure 44 a large, graceful canopy bed stands in the foreground. The texture of the valance, the bedspread, and the Numdah rug on the floor are suited to use with the bed, and the other furniture in the room as well as the lighting fixtures are more or less appropriate to the adjoining pieces. Against the rustic background of a log cabin, however, such furniture is incongruous.

In Figure 45 an enameled and gilded table, curved in every line, is placed against a background in which every detail is diametrically opposed in feeling. The dark paneled wall, hung with a tapestry,

the vigorous and dignified lounging chair and ottoman upholstered in coarse hand-blocked linen, the metal lamp, and the massive table in the corner are perfectly keyed each to the other, but the tiny, fragile, tea table is definitely out of place.

Unity with Diversity.

Unsuccessful rooms may be blamed, in general, upon two causes: (1) Too much unification of color, line, and texture resulting in



FIGURE 44.—Sophisticated furniture is inappropriate in a rustic background

monotony; (2) too much variety, with a hodgepodge of unrelated parts.

During the early part of the twentieth century the tendency was to strive for restfulness at all costs. Consequently there was unity without beauty. The straight line was dominant, and a somber brown the prevailing color. Because rooms lacked diversity, they were uninteresting.

In contrast to this type of room is that in which a wide variety of woods, colors, and textures with a divergence of form from the

soft curve to the vigorous rectilinear contour spoiled any chance for unity.

Since every room is composed of many related parts, it is necessary that there be a certain amount of repetition of the various elements. With a number of easily recognized likenesses, the eye notes the beginnings of harmony. But too much likeness begets monotony, and the element of contrast adds piquancy to the harmony, accenting and emphasizing it. Contrast requires that the grouping be enlivened



FIGURE 45.—With one exception, every piece in this group is well chosen. The dainty enameled table in the foreground is not scaled to the massive, large textured chair, or to the background. (See p. 95.)

by the introduction of elements which differ more or less markedly from the prevailing features in color, shape, or tone. Thus a rust-colored sofa on a sage-green carpet would relieve the monotonous effect achieved in the early twentieth-century room noted above.

In dealing with color, there is necessity for a dominant element. There is likewise need for dominance in proportions, contours, as well as the texture of woods and fabrics.

Thus we might choose green as our foundation color, rust as our contrasting color, and a small amount of blue or of orange for

emphasis. In general, colors should be dominantly dark or light, depending upon exposure of the room, and the theme the home maker desires to express in the room, which may be carried out in relative heaviness or lightness of proportions, and other details.

Likewise, there should be a preponderance of straight line or curved line, so that one will bring out the other. Other elements of similarity may be the connecting link between the two types. The Louis XVI style has as one essential feature, straight lines and square corners. The Louis XV contour is curved. With a dominant amount of Louis XVI furniture in a room, a smaller amount of Louis XV furniture adjoining would probably be pleasant notwithstanding the difference in line, because of the similarity in proportion and coloring. The eye demands a judicious balance between the straight line and the curve. If one form or the other is correctly emphasized, a proper relationship results.

In a room in which the walls are smoothly plastered, or covered with a small figure paper, woods and fabrics of fine texture and refined pattern are appropriate. With rough plaster, dark paneling, or large patterned paper on the walls, a coarser wood grain and a rougher textile weave are more suitable.

Woods Used Together.

Blending of woods requires a nice discrimination. The points in which they have similarity are texture, finish, and color. Although it is desirable to have the same or similar woods in most of the furniture for a particular room, it is not always possible.

A brown oak and a brown walnut finished in dark, mellow shade might be very acceptable in adjoining pieces. Likewise a rich red-brown mahogany and a vivid, golden brown, figured walnut would have similarity of texture and a pleasant relationship in color. The dark, open-textured oak and the light red, fine-textured mahogany, however, would have little in common.

Rosewood and many others listed as rare imported woods are well adapted to use with mahogany. Red gum has the soft texture suitable to use with mahogany or walnut furniture, and may be stained in a tone to match either.

Pleasing contrasts may be secured by combining amber-colored walnut with an inlay of ebony. A dining room may gain added distinction if a Louis XVI console serving table of inlaid satinwood is used with a mahogany table of eighteenth century English design.

One or two small pieces in red or black lacquer, or in gilt, may add to a room that touch of color which it needs, if most of the furniture is walnut or mahogany. The use of gray painted furniture, or cream or white enameled pieces in a proper setting, is often very satisfying.

Birch, maple, and cherry are woods which have much in common, and each may be used satisfactorily with walnut. They may be used with the fine or the coarse textured woods if the stain and the luster provide recognizable likenesses. Care should be taken, however, to avoid that just off-color tone which would be discordant.

Chestnut, as well as walnut, may have enough similarity to oak to be used in conjunction with it, when proper relationships have been established. Wrought iron and brass are likewise suited to use with the heavier woods.

A successful room will depend upon the proper relationship of each element in it to each other and to the whole. Therefore, in selecting each piece it is well to consider the background, the usage, the draperies, the floor covering, the upholstering materials, the woods, shapes, the color scheme, and the emotional expression the home maker prefers for the room.



FIGURE 46.—In this spacious room, massive furniture of English, Spanish, Italian, and French inspiration is combined effectively. Because of the appropriate background, the setting is most satisfactory. Line, proportion, and materials, as well as the colors, produce harmony.

There are countless well-written and beautifully illustrated books on period furniture for those who wish to reproduce exact historic interiors. Persons wishing such rooms presumably either will become sufficiently informed through reading, or will seek competent counsel.

The following is a list of the names of the members of the American Medical Association who have been elected to the office of President of the Association for the year 1911. The names are listed in alphabetical order of their surnames.



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PART IV

Chapter 13.—CARE AND REPAIR OF FURNITURE

FURNITURE, like milady's complexion, requires constant attention if it is to keep its smooth texture. "Patina," that dark color and rich appearance of wood which has been given good care for a number of years, is one of the assets of antique furniture. It can not be acquired over night. Like care of the person, it pays in the end to do the many little things which give furniture long life and lasting beauty.

Particularly in this age when children have so much freedom, when little feet scuff the legs of beautiful wooden pieces, and when tiny hands beat a tattoo on smoothly-glossy table top with sharp, metallic objects, care of wood is a problem.

It is assumed that dusting of your furniture is in the daily household routine. It is an important task and when regularly carried out, will do much to maintain and even enhance the original beauty of the pieces. Soft cheesecloth, rags of old silken material, chemically-treated dust cloths, or dust mittens which may be purchased at almost any store, all are well suited for this purpose. At no time should dust cloths of new materials that throw off lint be used, and dusting with a soiled or grimy cloth is worse than no dusting at all.

Dusting serves more than the one purpose which the word in itself indicates. It not only removes the daily collection of dirt and grime, but in so doing brings out the inherent beauty of wooden furniture. Its grain will be seen to assume new and attractive features with regular dusting which, of course, polishes the fine finishes. The householder will find that dusting makes cleaning and polishing periods farther apart, but when cleaning and polishing are necessary, there are a number of important facts to be borne in mind.

One of the best ways to clean furniture is to wash it. A standard product available in most drug stores is known as green soap. It looks like vaseline. Take a soft cloth, soak it in warm water, put a teaspoonful or two in the damp pad, and run it over the polished surface until you get circles of froth. This application will remove butter, finger marks, or sirup from the dining-room table.

After the entire surface has been covered with a generous application of lather, take another cloth, dampen it with tepid water, and wipe the surface clean. Then wipe it a third time with a soft, dry cloth, rubbing with the grain, and the surface should look like new. White soap which is absolutely neutral and pure will produce the same effect.

To remove the foggy appearance so frequently noticed on highly polished furniture, dampen a clean piece of cheesecloth with a solution made from one quart of clear water to which has been added a tablespoonful of vinegar, and apply it to the surface, rubbing with the grain.

Polishing.

In using furniture polishes, take a piece of cheesecloth and wring it out after saturating it with hot water. When the cloth is cool, shake the polish thoroughly and spray a bit of it on the rag in the palm of your hand, and clean off the furniture. You will find that the cloth turns black and dirty. When you have cleaned a piece of furniture in this manner, take a dry cloth and rub with the grain until the finger no longer makes an imprint on the furniture.

"Elbow grease" is still one of the best polishes in existence and it may be applied with either wax or turpentine-linseed oil polish.

Our ancestors acquired beautiful patina through the years by rubbing, *rubbing*, RUBBING. Floor wax of recognized merit will give a soft, mellow glow to most modern reproductions which are not finished with varnish or lacquer. It will be satisfactory in most cases and will prevent the possibility of the foggy appearance on the surface of some finishes, which looks like the dull gray bloom on some chocolates. Wax rubbed on the polished surfaces of your furniture at regular intervals will enhance the beauty and durability of the finish.

For antique pieces, a mixture of 2 parts turpentine and 1 part linseed oil is recommended. Another mixture is equal parts of turpentine, linseed oil, and vinegar. These should be applied with a soft cloth, and rubbed and polished until the arms are exhausted. Then the pieces should be polished again the next day with a rough, dry cloth. A little care each day will gradually bring out the beautiful finish.

In restoring the luster of old pieces, milder methods should be tried first, for scrubbing with a steel brush, for instance, is apt to remove the patina which years have given to the wood. If the simpler remedies fail, the more rigorous treatments can be gradually applied.

Humidifiers.

It is wise to give thought to the relative humidity in the rooms during the fall, winter, and spring months. From 40 to 60 per cent is desirable. The best devices for regulating this are built into the heating system; water pans on radiators may help to raise the humidity. In a 7-room house, several gallons of water should be evaporated each day during the season of artificial heat and closed windows. Humid air is healthier for the people living in the room as well as for the woodwork and for the furniture. Wood is apt to dry and crack if there is insufficient moisture in the air when heat is turned on after a house has been open during the summer.

Repair.

The person who enjoys "doing things around the house" with comparatively few utensils and materials may doctor furniture in the basement and secure splendid results if sufficient care and time are given to the task.

The person who is not apt with the hands, and who possesses few or no tools, would do better to send damaged furniture to a repair shop than to tinker with it at home. Furniture stores usually operate such shops largely as a matter of convenience for their customers. The cost of doing the work at home, not including the

time of the person doing it, probably would amount to as much as the charge for the labor and materials in the hands of an experienced craftsman.

Scratches are a common affliction. The first step in the repairing is to remove splinters so that no protruding wood is visible. If left in the wood, these will become saturated with stain or dye and appear much darker than the surrounding surface.

There are two methods which can be used by the layman in repairing scratches on furniture. For small scratches, a package of dye of the required color may be obtained at any drug store at small cost. This dye may then be mixed with water until it becomes the shade desired. A tint just a fraction lighter than the wood to be colored, should be used, because too much soaking will darken the wood and make it different from the surrounding wood. The color may be tested by dipping a small strip of blotter into the mixture.

The next step is to take some plain white shellac, available at small cost at any paint store, and with a camel's-hair brush, using light, delicate strokes, fill in the scratch, being careful not to overlap the edges. The stroke should be a soft one—like painting with oil or water color—rather than the broad daubs used with a larger brush in painting a house. If the shellac should become higher than the depression, it may be scraped off with a razor blade, using a light "through" stroke.

For larger scratches, stick shellac may be burned in. This operation is harder than the first and requires a sure, steady touch. Stick shellac, which looks like sealing wax, is available in many wood colors in paint stores, costing a negligible sum. A spatula is also desirable, although a knife or a nail file may suffice. After heating the point of the spatula or knife, it should be rubbed hurriedly on No. 0 sandpaper to remove soot or smoke, and the shellac burned into the depression, trying to bring it exactly even with the surface. The heated blade should be used as a smoother as in leveling out sealing wax. A razor blade may also be employed to remove extra shellac. Cleaning and oiling or waxing the piece after repairing the scratch will make it look better.

By concentrated looking at an imperfection it may be magnified in the worker's eyes. If the repaired piece is put away for 24 hours, and then examined, probably the appearance will be considerably better than it seemed after completing the operation.

Wood finish which has turned white.—Wood which has had its finish marred so that it turned white because a hot dish has been placed upon it or liquid has discolored it, may be restored to its original appearance in most cases by application of one of three methods.

The first method is to apply turpentine to the spot. This usually penetrates the surface and restores the color of the stain without softening the finish. Another method is to pour alcohol on the spot, allowing it to remain a few seconds, after which it is pushed or scooped off with a small piece of cardboard. In either case the spot should then be rubbed dry with linseed oil. The alcohol is more prone to soften the finish than is turpentine.

Another means of removing white spots is to place a woolen rag over the marred portion, after which a not-too-hot iron is passed

over the area until the heat remelts the shellac. Keeping the iron continually in motion and passing it back and forth, taking care not to keep it too long in the affected place, usually will work the color back over the discolored portion. Absolute caution is necessary during this operation to prevent disastrous sticking of the cloth to

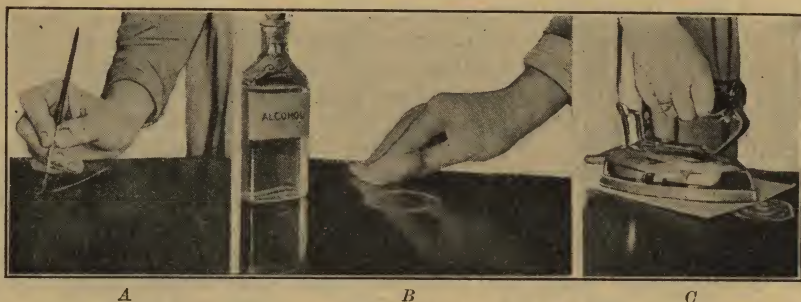


FIGURE 47.—*A*, furniture marred by scratches may be given a touch of stain, followed by a filling of white shellac. (See p. 103); *B*, finish which has turned white may be returned to its natural color by the application of turpentine or alcohol; *C*, a "last resort" measure to remove white spots from furniture is the application of a warm iron, after a cloth has been placed upon the injured spot. The heat remelts the shellac

the finish, imprinting the texture and pattern of the cloth upon the finish.

Gluing.—When glue joints come open because of excessive moisture, it is well to remember, when repairing, that glue sticks to wood better than to hardened glue; therefore, all dry glue should be

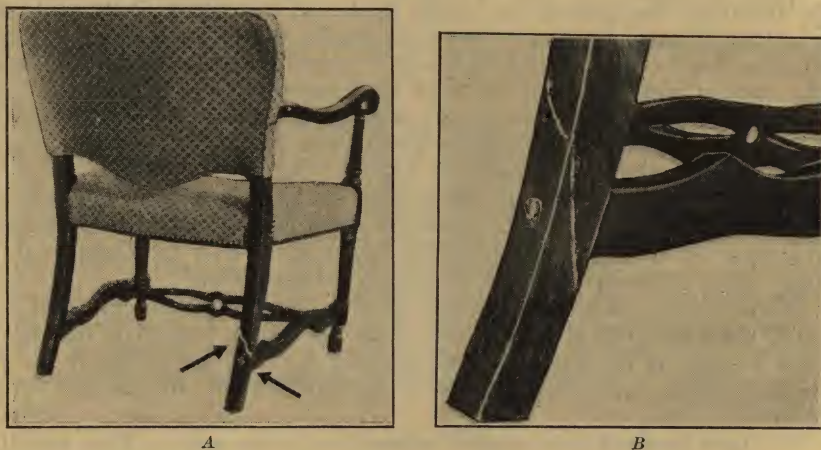


FIGURE 48.—*A* chair leg, broken along the grain, has been repaired by the use of glue at the breaking point, plus a screw through the leg, as support. *A* shows the chair; *B*, a "close-up" of the repaired fracture

scraped from the joint before fresh glue is applied to rejoin the pieces of wood.

Broken legs.—If a chair leg breaks off not far from the floor, the following process may prove helpful in repairing it: Remove any loose slivers. If small pieces of wood have cracked off, they may be glued into place. A screw immersed in glue may then be inserted

into the bottom part, and into the stump of the leg. A clamp will hold the leg in place until the glue dries. At least two days should be allowed for the drying process. (See fig. 48.)

Transportation of Furniture.

In moving from one city to another, the home maker should be as careful with furniture as with the finest china. Movers, as a rule, give adequate protection to furniture, but it is impossible to foresee unexpected hazards in transit. The owner, very naturally, has a greater interest than any other person could have in his property. Simple precautions will prevent unnecessary damage.

Preparation for crating.—All detachable parts such as mirrors, casters, glass tops, and toilet boxes, should first be removed. Small loose parts which are unbreakable may be placed in bags so that they will not be lost. Mirrors, glass tops, and other fragile pieces should be packed separately and fastened securely inside the crate which carries the chest or dresser to which they belong. For safety and convenience in unpacking, it may be wise to distinguish the breakable material from the rest by wrapping the fragile articles in red, yellow, or blue tissue paper. Drawers, doors, and slides should be closed and either braced or blocked shut. All furniture should be properly wrapped with suitable materials—paper or cloth—to protect the finished surfaces.

Crating.—Crates should be large enough to inclose every part of the furniture; nothing should protrude. Furniture with breakable legs should not rest on the bottom of the crate; it should be supported by strips of wood across the bottom of the cabinet so that the legs swing free.

Tight-fitting crates are desirable, but there should be at least an inch between the crate framework and the finished surfaces to prevent marring of the wood. Cement-coated nails are best for nailing a crate together. For fastening furniture to the crate, it is recommended that screws be used. A 3-way corner joint is considered best for crate construction. At least one diagonal brace should be secured to each of four vertical faces of the crate to increase its rigidity.

Crating is not necessary when furniture is being moved from one part of a city to another, but ordinary precaution would dictate that each article be wrapped in heavy cloth or paper with padding to prevent edges from being marred when going through doors or windows. The wrapping will eliminate much nicking and chipping.

The covering should not be removed until the furniture is in the room in which it is to be used. At the earliest possible moment, the furniture should be gone over with a suitable polish on a large, clean dusting cloth.

Remedies described in previous paragraphs have explained how to repair and to reglue loosened joints, but in case of serious injury to valuable pieces due to moving, it is advisable to call in an expert rather than take a chance on further damaging the furniture by clumsy artifices.

Eliminating Insect Pests.

There are two types of insect infestation which are particularly damaging to furniture. One is the dry-wood termite or so-called white ant, which thrives in the tropics and extends as far north as

Virginia and northern California in the United States. It is a particularly malicious pest in Panama, and in the Philippine and the Hawaiian Islands. The other type is the *Lyctus* or so-called powder-post beetle.

Perhaps the best remedy for the termite¹ is to saturate the infested furniture with orthodichlorobenzene. If this treatment is not practical, dry Paris green should be blown into holes bored with an auger, using bellows for blowing. These holes should penetrate the galleries of the termites. If the Paris green becomes caked, the treatment should be repeated. The orthodichlorobenzene should be used in a room which has been opened because the chemical odor is quite disagreeable. It is painful, too, if it gets in the eyes.

The powder-post beetle can not enter wood in which the pores have been sealed, so the best preventive for this type of insect attack is to wax or varnish unfinished portions of the wood.² Linseed oil is another substance which will fill the pores of wood and keep out the pest. In old furniture, it may be wise to drench the entire piece in kerosene before refinishing it. Where it is desired to strengthen a piece of furniture so damaged, pour molten paraffin over the wood, wipe off the excess paraffin, then refinish the wood which has been given more body.

*Moths.*³—There are a number of insect pests which have a taste for upholstered furniture. Two of the principal ones are the clothes moth, which eats the fabric covering, and the tobacco beetle, frequently called the tow bug, which destroys the stuffing materials. Book lice, which swarm from vegetable upholstered stuffing materials, are more annoying than they are harmful.

The clothes moths in adult form are the millers which are seen flying about the house, particularly during the spring and late summer. They can not damage upholstered furniture, but they may lay many small white eggs upon it. Living about 3 weeks, they may lay as many as 200 eggs which hatch in from 5 to 10 days into tiny worms or larvæ, which have well-developed jaws and feed upon fabrics. Mohair plush is a particularly tempting morsel.

When new, most mohair furniture has been treated with a moth preventive or deterrent which should be effective for an extended period of time. The safest method of avoiding trouble is to inspect the upholstering at least once each fortnight, and to give the fabric a vigorous brushing with a stiff whisk broom, stroking with the nap. The eggs, and even newly hatched larvæ, will be crushed by this process. Particular attention should be paid to seams and pockets, as well as to the part against the wall and any portions which are in dark corners. A vacuum cleaner is also helpful in removing the eggs and larvæ.

The tobacco beetle usually injures covering materials only to get out from the stuffing. While destroying the stuffing materials, the presence is not generally so harmful as that of the clothes moth.

¹ Preventing Damage by Termites or White Ants, Farmers' Bulletin 1472, U. S. Department of Agriculture, by T. E. Snyder, Senior Entomologist, Bureau of Entomology.

² Defects in Timber Caused by Insects, Bulletin 1490, U. S. Department of Agriculture, by T. E. Snyder, Senior Entomologist, Bureau of Entomology.

³ Preventing Damage by *Lyctus* Powder-Post Beetles, U. S. Department of Agriculture Farmers' Bulletin No. 1477, by T. E. Snyder.

⁴ See U. S. Department of Agriculture, Bureau of Entomology Publications Nos. 1353-F 1346-F and 1655-F; Clothes Moths and Their Control; Carpet Beetles and Their Control, and The Control of Moths in Upholstered Furniture, by E. A. Back and R. T. Cotton.

Antimoth treatments applied to covering fabrics will not have a particle of effect in preventing tow bugs from infesting the stuffing of a chair.

There are a number of preparations on the market for the purpose of making upholstered furniture "moth proof." From tests and investigations, it appears that nothing makes stuffed pieces absolutely proof against the ravages of tow bugs or moths. They will eat dried vegetable matter even if they are forced to take a strong dose of poison along with it. Many manufacturers of these preparations claim nothing more for them than that they discourage the pests.

Many dealers insist upon applying the curative themselves because much of its effectiveness depends on correct and thorough application. Several tests were carried on by the Bureau of Entomology of the Department of Agriculture and the conclusion was reached that moths will destroy fabrics saturated with moth-proofing solution, but if a preference is offered they choose those without the solution.

The person discovering infested upholstered furniture would do well to send for an expert to fumigate it. Many hand sprays do not force the solution deeply enough into the furniture to kill all the pests.

Another method of stopping moth infestation is the "baking" process. In furniture factories and in lumber mills there are dry kilns in which moth-beset furniture may be placed under a temperature of not to exceed 140° F., for a period of five hours. While such heat treatment is an almost certain cure, such kilns are not always available. If the heat exceeds the 140° mark, it may blister the wood finish, which however, is easily remedied by refinishing.

Cleaning Upholstered Furniture.

In addition to guarding against moths, regular cleaning will preserve the beauty and lengthen the life of upholstered furniture. The special appliance supplied with vacuum cleaners may be employed; loose cushions are first removed and the entire piece given a thorough suction. Down-filled cushions should not be cleaned in this manner, because the feathers may be drawn through the covering; a careful brushing will suffice.

One-half cake of neutral soap, shaved and dissolved in 1 quart of boiling water, will provide a paste for scrubbing coverings. A small amount of this solution is mixed with cold water and beaten to a stiff "dry" froth. Using a quantity of these suds, a small section of fabric is scrubbed at a time with a stiff bristle brush, using a rotary motion. A generous application of suds throughout will prevent uneven cleaning. As much lather as possible is removed and the remainder taken up with the vacuum cleaner. A sponge, dampened—but not soaked—in tepid water is then applied to the cleaned portion.

The process described above will prove very satisfactory for many classes of furniture covering, such as tapestry, rep, denim, and many others, if the colors are fast. The treatment should be tested in an inconspicuous part of the covering, to determine its application to the particular fabric. It is possible to clean mohair plush in the same way, although it may be necessary to freshen the nap afterward. For many types of cotton pile fabrics, particularly

velvet and velours and some silk velours, this treatment would mat down the pile, and would result in giving the textile a "scrubbed" look which most women would find unsatisfactory. In case of doubt, it is always wisest to call in a professional cleaner.

In cleaning a pile fabric, careful wiping with the nap of the goods will prevent the base fabric from becoming soaked. This process is repeated until the entire piece has been cleaned. The fabric should be thoroughly dry before the piece is used again.

While the foregoing treatment will suffice in most cases, specialized methods may be necessary to remove certain stains. If there is a blood stain, use of chloroform in the open air, peroxide of hydrogen or, in the case of thick goods, a paste of raw starch and tepid water will usually accomplish the desired result; with silk fabrics, strong borax water should be used. For candy stains, use cold distilled water; for coffee stains, the same treatment followed by permanganate of potash solution, and then a mixture of 1 part peroxide of hydrogen, 1 part acetic acid, and 2 parts of water. Repeat the latter application until the permanganate of potash and stain disappear. Fruit stains will respond to the same treatment.

For grease or oil stains, an application of naphtha or chloroform in the open air, allowed to soak in well, followed by placing a slightly heated iron on a piece of blotting paper over the stain may be effective. Sponging with carbon tetrachloride, rubbing with the nap of the goods, is an alternate treatment.

To remove ink and rust stains, a solution of 2 tablespoons of bi-oxolate of potash dissolved in a pint of boiling water and allowed to cool, is applied, then followed by water to neutralize the acids. If this is not successful, employ the permanganate of potash solution recommended for coffee stains. If the stain still persists, try a few drops of carbolic acid, followed by wood alcohol.

Medicine stains may be dissolved in alcohol; soot may be removed if the spot is saturated with ether and covered with a cup to prevent evaporation. Paint or varnish stains may yield to carbon tetrachloride sponging, rubbing with the nap until the stain disappears.

While these methods may be used with safety on the majority of materials, many delicate and highly prized pieces should be treated by an experienced dry cleaner. The novice may find it advisable to intrust such work to more competent hands.

APPENDIX

GLOSSARY OF FURNITURE TERMS

- ACANTHUS:** A Greek conventional leaf ornament used as a decorative feature of carved furniture, and a characteristic of the Corinthian capital.
- APRON:** A strip of wood extending along the seat framing of a chair, the base of a cabinet, or around the top of a desk or table.
- ARM PADS:** The upholstered part of chair arms.
- BALL FOOT:** The ball termination of a leg.
- BANDING:** A contrasting band of colored or grained inlay.
- BAR BACK:** A Hepplewhite shield back with uprights curved to match the shield design.
- BAROQUE:** Rectangular outlines softened by curves, following the Renaissance, exemplified by Louis XIV, late Jacobean, and William and Mary furniture.
- BASE:** The bottom of a piece of furniture.
- BEAD:** A narrow half-round molding, either continuous or cut into small sections to form a series of rounded projections or beads.
- BED POSTS:** The pillars supporting the canopy, or the bedstead legs themselves.
- BLOCK FOOT:** A square-shaped termination of a straight, untapered leg.
- BOMBE:** The arched or bulging front and sides found in pieces of the Louis XV period.
- BRACKET FOOT:** A two-way foot, running each way from the corner of a piece of furniture, forming a right angle at its base; much used on box-shaped furniture during the eighteenth century.
- BROKEN PEDIMENT:** A pediment, the side lines of which do not come to a point or join.
- BULBOUS:** An adjective describing a protuberant form of turning, introduced by the Dutch.
- BUN FOOT:** A flattened globe, or bun-shaped foot.
- BURLS:** Excrescences sometimes appearing on trees, caused by abnormal growth, such as large knots.
- BUTT JOINT:** Joint made by joining together end wood, usually stumps, crotches, etc.
- BUTTS:** The stump ends of trees.
- CABRIOLE:** A style of leg which swells in a convex line at the knee and turns in concave form at the ankle, terminated by various types of feet.
- CARVING:** A form of ornamentation which is executed by cutting or chiseling designs on a surface.
- CARYATIDES:** Supporting columns in the form of women.
- CHAIR BACK:** The top or back portion of a chair.
- CHESTERFIELD:** An overstuffed sofa or couch having two sides or ends.
- CLASSICAL:** Greek and Roman forms or styles.
- CLAW FOOT:** A foot shaped like an animal's claw.
- CLAW-AND-BALL FOOT:** A foot carved in the form of a bird's claw grasped around a ball.
- CLUB FOOT:** An eighteenth century style of foot, shaped outward from the leg into a thick, flat base; usually used with a cabriole leg.
- COLUMN:** A vertical shaft or pillar, used in furniture as a support.
- COMPOSITION:** A substitute for wood usually in carvings.
- CORE:** The internal part of a piece of furniture. In reference to veneer, the base of plywood or solid wood upon which the veneer is placed.
- CORNER-BLOCK:** A triangular block fixed in the corner of the frame of furniture to add strength.
- COENICE:** The top or finishing molding of a column or piece of furniture; on box-shaped furniture this projecting molding is often elaborately carved.

- CROSS BANDING:** Placement of a layer of veneer so the grain runs transversally to that of the main surface, in plywood panels.
- CROSS RAILS:** Pieces stretching from the back to front partition rails, for holding dust bottoms and often to serve as drawer slides.
- CROTCH:** Veneer cut from limb crotch, or from twin trees which have joined together, forming an unusual end wood figure.
- DECORATION:** The ornamentation of furniture, such as carving, painting, inlaying, applying of moldings, mounts, upholstery, etc.
- DIAPER WORK:** A conventional decorative design, used on surfaces at regular repeated intervals.
- DOVETAIL:** A joint made by interlocking wedge-shaped tenons and spaces.
- DOWEL:** A pin or peg fitted into two adjacent pieces to fasten them together.
- EGG-AND-DART:** A form of classic molding in which the oval or egg and a dart are alternated.
- ESCRITOIRE:** A desk with drawers, pigeonholes, and perhaps a hidden compartment.
- ESCUTCHEON:** A shield-and-crest carved ornament; also brass hardware over a keyhole.
- FESTOON:** A decorative series of scallops forming a rope or chain of flowers, drapery, or the like.
- FIGURE:** Unusual design in the grain of wood, such as mottle, fiddle-back, or marks other than the natural grain of the wood.
- FINGER JOINT:** A bracket joint, consisting of fine interlocking fingers.
- FLAT CARVING:** Carving in which the only background is cut or taken out, leaving the design itself flat.
- FLUTING:** Decoration by means of flutes or channels as in chair leg or dresser post.
- FOLIATED:** Decorated with a leaf design.
- FRET:** Ornamental work of an interlaced design, either perforated or applied on a solid background.
- GARLAND:** A wreath of leaves, flowers, fruit, etc., used as a decorative detail.
- GLUE BLOCKS:** Small blocks of wood glued or otherwise fixed into a carcass for the purpose of strength and support.
- GROS POINT:** A pattern of embroidery used on upholstery material.
- HIGH-BOY:** A tall chest of drawers mounted on legs.
- H-HINGE:** A hinge with long leaves or flat parts which when open form the letter H.
- HUSK ORNAMENT:** A conventional design based upon the catkin flower, usually in the form of festoons.
- INLAY:** A design formed in the surface of wood by the inserting of contrasting woods, ivory, or other materials.
- INTARSIA:** A kind of mosaic work, much used by the Italians during the fifteenth century.
- LACQUER:** A high luster varnish consisting of a solution of shellac in alcohol.
- LADDER-BACK:** A chair-back with series of horizontal slats placed between the uprights.
- LAMINATE:** To build up wood in layers; each layer being a lamination or ply. The construction of plywood. (See ch. 7.)
- LEG:** The support upon which a piece of furniture rests, terminated by a foot, of infinite variety and often manifesting certain periods.
- LINEN FOLD:** A carved or painted ornament resembling folds of linen; originating from folded napkin placed on the chalice at consecration of the Host in Catholic ritual. Found in Gothic ornament.
- LYRE:** A decorative motif, shaped like the musical instrument of the name.
- LYRE BACK:** A chair back shaped like the musical instrument, the lyre, an Adam and Duncan Phyfe style.
- MARQUETRY:** An inlay of contrasting wood or other material into a background of veneer.
- MEDALLION:** A circular or oval carved ornament.
- MITRE:** Two sections of wood cut obliquely to form an angle.
- MORTISE:** To join wood together by means of tenon and mortise, tenons being the projections and mortises the holes into which the projections fit.
- MOTIF:** The controlling idea or leading feature in a piece of work.
- MOLDINGS:** Ornamented or shaped strips either made or applied on furniture.
- MOUNTS:** Fittings and other ornamented pieces, usually made of metal, placed on furniture to decorate and strengthen.

- NEOCLASSIC:** (New classic) Designating the revival of classic taste in art, applied to the second revival after the discovery of Pompeian art early in the Eighteenth century.
- NEEDLEPOINT:** An embroidery of woolen threads upon canvas, used as a covering in upholstery.
- ONLAY:** Ornament laid on surface woods.
- ORMOLU:** A metal composition resembling gold, used for mounts on furniture.
- OVAL BACK:** A chair back of rounded shape, usually connected with Hepplewhite along with his famous shield-and-heart backs.
- PANEL:** A surface set above or below the general surface of a piece of furniture, or effected by means of applied moldings.
- PAW-AND-BALL FOOT:** A foot shaped like the claw-and-ball foot, but having an animal's paw in place of the claw.
- PEDIMENT:** Structure above the cornice of cupboards, desks, mirrors, etc., usually triangular. (See **BROKEN PEDIMENT**.)
- PETIT POINT:** A pattern of embroidery used on a silk upholstering fabric.
- PILASTER:** A carved, flat column attached to the surface of a piece of furniture.
- PINEAPPLE:** A pattern used in carving, resembling the lines in the fruit of the pineapple tree; also the leaves and shape of the fruit.
- PLAQUE:** A medallion or disk made of porcelain, or other such material, used as a decorative feature of furniture.
- POLYCHROME:** A form of painted ornamentation originating in Egypt and much used in Italy during the Sixteenth century.
- POSTS:** The uprights of poster beds; also used to refer to the upright corner pieces of any article of furniture; the projecting pieces of a handle which fit into the holes of a frame and secure the handle.
- PRINCE OF WALES' FEATHERS:** A decorative device, used by Hepplewhite, consisting of three plumes or feathers.
- REEDING:** A raised series of semicircular moldings, somewhat resembling a reversed fluting.
- REFECTORY TABLE:** A large dining table of early date, built long and narrow with a heavy stretcher close to the floor.
- ROCCO:** Style of decoration which followed the baroque distinguished by a delicately executed ornament in imitation of rockwork, shells, foliage, and scrolls massed together.
- ROSETTE:** A rose-shaped pattern.
- SCALLOP:** A carved design for edges or borders resembling the scallop shell.
- SCROLL:** A spiral line, often suggestive of plant life, used for ornamentation.
- SCROLL FOOT:** A foot in the form of a spiral scroll, either at back of the leg or in front.
- SERPENTINE CURVE:** A wave-like scroll consisting of two concave curves with convex curve between.
- SHELLAC:** A gum derived from bugs on a little tree which grows in India.
- SHELL ORNAMENT:** A carved design in the form of a cockleshell, either convex or concave.
- SPEADE FOOT:** A rectangular-shaped foot slightly smaller at the base; a Hepplewhite detail.
- SPANISH FOOT:** A rectangular-shaped foot slightly larger at the base with narrow moldings down the front.
- SPIRAL TURNING:** A twisted form of turning, resembling a screw.
- SPLAT:** Broad, flat upright member in middle of chair back.
- SPOOL TURNING:** Continuous turning of spool-like pattern.
- SQUARE LEG:** A straight, square-shaped leg, often having beveled inner edge, used by Chippendale in his Chinese designs.
- STRETCHERS:** The underbracing of chairs, tables, etc., often of elaborate decoration and form.
- TESTER:** A canopy over a bed supported by bedposts.
- THREE PLY:** Plywood built, using three separate plies.
- TORCH:** A decorative feature in the form of a torch, often used as a terminal.
- TRESTLE:** An early, heavy frame support for table.
- TRESTLE FOOT:** A leg termination extending in opposite directions so as to form a sort of two-way foot.
- TRUMPET-SHAPED LEG:** A turned leg resembling a trumpet, the small end of which joins the foot.
- UNDERBRACED:** Used to refer to a piece of furniture strengthened by stretchers.
- UPHOLSTERY:** The coverings, draperies, or cushioning of a piece of furniture such as of leather, tapestry, plush, etc.

- VARNISH:** A paint solution of resin boiled in oil, used to produce a transparent, shiny finish on wood.
- VENEER:** A thin sheet of wood, usually of choice figure, glued to a solid or plywood surface of plain but not necessarily cheaper wood.
- WINDSOR CHAIR:** A type of chair, light in weight, with large wooden or rush seat, and any one of a considerable variety of backs, in spindle, slat or crossbar styles.

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ASSISTANCE GIVEN BY THE DEPARTMENT OF COMMERCE TO FOREST INDUSTRIES

The National Committee on Wood Utilization is receiving valuable aid from the bureaus and divisions of the Department of Commerce wholly or partly engaged in promoting the interests of our forest and wood-using industries.

Bureau of the Census.

This bureau is in charge of the compilation of statistical material covering a great variety of topics. It is closely cooperating with the committee in furnishing statistical data concerning forest industries and the consumption of forest products.

Division of agriculture.—This division compiles, in connection with the quinquennial census of agriculture, a variety of information regarding the acreage, burnings, clearings, and production of farm woodland.

Division of manufacture.—This division compiles, in connection with the biennial census of manufacture, data on the manufacturing industries of the United States, including the basic forest-products industries and the wood-reworking industries.

Bureau of Foreign and Domestic Commerce.

This bureau is directly engaged in promoting the foreign and domestic trade of the United States. Through it American business organizations are receiving assistance in acquiring new business and in furthering trade already established. The bureau maintains 29 district and 50 cooperative offices in the United States and 56 offices in the principal foreign trade centers.

Lumber division.—This division was organized to assist export trade in lumber and lumber products. It also studies various problems affecting the lumber trade of the United States. The National Committee on Wood Utilization is extending good wood-using practices in the foreign field with the assistance of this division.

Paper division.—This division is engaged in promoting the interests of American pulp and paper manufacturers in the foreign and domestic fields.

Chemical division.—The chemical division promotes the sale of American chemicals and allied products in foreign markets and gives information and statistical service, conducts market surveys, and cooperates with the manufacturers of wood chemicals and other chemical products. It is closely cooperating with the committee in wood chemical studies in the United States and abroad.

Merchandising research division.—This division provides practical assistance to American industries which are searching for better methods of calculating the costs of distributing merchandise, which, because of overlapping with other industries or for other sufficient reasons, need official help in specific industrial marketing problems, such as the collection of basic market data on commodity sales, stocks, distribution outlets and methods, consumer preferences, or which lack modern methods of credit research.

Domestic regional division.—This division studies regional commodity movements providing basic statistical pictures of the flow of goods in interstate commerce otherwise not available and of fundamental importance in directing necessary adjustments to modern conditions in production, transportation, and marketing. The development of authoritative information concerning population buying power, distributing outlets, and routes, and warehousing centers is undertaken by the domestic regional division, as well as continuing research in the fundamental factors of regional markets, labor, and materials which influence the migration of trade and industry from one section of the country to another.

Marketing service division.—This division provides facilities whereby the individual manufacturer, distributor, and retailer can obtain definite information and assistance on any details of their particular problems in marketing merchandise. It serves as a clearing house for information on the distribution of merchandise within the United States, and issues periodic publications designed to keep the public informed of the true significance of modern developments in this field.

Bureau of Standards.

The Bureau of Standards is cooperating with 200 scientific, technical, and industrial organizations. It operates the largest scientific laboratory in the world.

Division of simplified practice.—This division is engaged largely in the standardization and simplification of forest products. The committee is closely cooperating with this division in extending good wood-using practices in the consumer's field.

Division of building and housing.—The work of this division is mainly devoted to the promotion of better practices in building and construction fields. A notable improvement has been made in building code work. Since building and construction offer the largest outlet for forest products, the committee's work is closely connected with this division.

Division of specifications.—The duties of this division are to promote and facilitate the use and unification of specifications. The improvements in the manufacture and utilization of lumber and other forest products are in direct line with the aims of the National Committee on Wood Utilization.

Division of trade standards.—This division, when requested, aids industrial and commercial groups in establishing standards of grades, quality, and measurements for their products or purchases. The commercial standards and certification plans thus promulgated are of great value to the consumers and producers of forest products who are represented on the National Committee on Wood Utilization.

Bureau of Mines.

One of the major activities of the Bureau of Mines has to do with increased safety, efficiency, and economic development in mining, and with the conservation of our mineral resources. The mining industry is one of the largest consumers of forest products, and for that reason the committee has established close relations with this bureau.

The committee is also receiving aid from other bureaus of the Department of Commerce, such as the Bureau of Fisheries, Bureau of Lighthouses, Coast and Geodetic Survey, Bureau of Navigation, Steamboat Inspection Service, and Bureau of Patents.

PUBLICATIONS OF NATIONAL COMMITTEE ON WOOD UTILIZATION

THE MARKETING OF SHORT-LENGTH LUMBER.

This report contains a careful analysis of more than 250 house plans representing the typical small American house, and shows that about 20 per cent of the total lumber bill may be purchased in lengths of less than 8 feet. Tables show where these short lengths may be used in building and construction. Price, 10 cents per copy.

END-MATCHED SOFTWOOD LUMBER AND ITS USES.

A discussion of the manufacture of end-matched softwood lumber, with particular reference to building and construction. The report points out an important saving in the use of lumber and installation costs. Price, 5 cents per copy.

SAWDUST AND WOOD FLOUR.

This report gives a detailed description of the known uses of sawdust. The subject of wood flour (ground sawdust) is given special treatment, mainly with the idea of making the United States independent of foreign supplies of this material. Price, 10 cents per copy.

GRADE MARKING OF LUMBER FOR THE CONSUMERS' PROTECTION.

This bulletin explains grade marking as applied to lumber, and shows the benefits and economies of specifying and using lumber marked to indicate quality. Price, 10 cents per copy.

SEASONING, HANDLING, AND CARE OF LUMBER.

A series of four bulletins has been prepared on the subject of proper seasoning, handling, and care of lumber, namely, Consumers' edition (price, 15 cents per copy), Distributors' edition (price, 20 cents per copy), Fabricators' edition (price, 25 cents per copy), and Manufacturers' edition (price, 30 cents per copy).

SURVEY OF NONUTILIZED WOOD IN VIRGINIA.

The first of a series of State surveys of nonutilized wood occurring at sawmills and wood-fabricating plants. Methods of utilizing and disposing of wood waste are suggested. An appendix lists the name and address of each firm which has nonutilized wood for disposal. A large map folder shows the location of nonutilized wood within the State. Price, 20 cents per copy.

SAP STAINS OF WOOD AND THEIR PREVENTION.

A description of different types of fungi, methods of identification and treatment; also kinds of equipment and machinery for treating lumber with chemicals, and the storage and care of logs to prevent sap stain. Price, 35 cents per copy.

WOOD CONSTRUCTION.¹

A 700-page handbook for architects, engineers, contractors, and builders, containing authoritative and detailed information of the use of wood in building and construction. Price, \$6.

YOU CAN MAKE IT.

The first of a series of bulletins which will contain 1,200 plans and suggestions for the construction of furniture, toys, and many useful articles from used wooden containers and odd pieces of lumber. Price, 10 cents per copy.

YOU CAN MAKE IT FOR CAMP AND COTTAGE.

The second of the You Can Make It series. Price, 10 cents per copy.

PROFITABLE UTILIZATION OF DISCARDED WOODEN CONTAINERS.²

Contains suggestions for promoting the committee's utilization program.

SURVEY OF NONUTILIZED WOOD IN NORTH CAROLINA.

The second of a series of State surveys of nonutilized wood. Similar in character to the Survey of Nonutilized Wood in Virginia, listed above. Price, 20 cents per copy.

SMALL DIMENSION STOCK, ITS SEASONING, HANDLING, AND MANUFACTURE.

Gives information regarding the best practices employed in the small dimension stock industry, and discusses conditions, problems of manufacture, cost finding, standardization, etc. Price, 20 cents per copy.

TEST OF SCANDINAVIAN GANG SAW ON PACIFIC COAST.

Describes in detail committee's experimental plant, mill layout and mechanical operation of the Scandinavian gang saw. Also discusses how small and defective logs, heretofore wasted, may be profitably converted into lumber. Price, 10 cents per copy.

TREATED LUMBER, ITS USES AND ECONOMIES.

The losses incident to the use of untreated lumber for various purposes, methods of preserving lumber against decay and insect attack, and the economies available to the builder and particularly to the home owner, through the use of chemically treated lumber, are discussed in this bulletin. Price, 15 cents per copy.

LIGHT FRAME HOUSE CONSTRUCTION.

A practical manual on wood construction for the use of carpenters. Prepared jointly by the Federal Board for Vocational Education and the National Committee on Wood Utilization. Price, 40 cents per copy.

HOW TO JUDGE A HOUSE.

Contains information on house construction of special interest to the home buyer. Price, 10 cents per copy.

Except as noted, the above publications are for sale by the Superintendent of Documents, Government Printing Office, Washington, D. C. Special rates of purchase in quantity will be furnished on application.

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² Published and distributed by National Committee on Wood Utilization, Department of Commerce, Washington, D. C.

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